

L 7009-66 EWT(d)/EWP(c)/EWP(v)/T/EWP(k)/EWP(1)/ETC(m) WW  
 ACC NR: AP5026802 SOURCE CODE: UR/0286/65/000/017/0084/0084  
 INVENTOR: Akulov, N. S.; Kozlov, V. S.  
 44 53 44 53  
 ORG: none  
 TITLE: A magnetographic inspection method. Class 42, No. 174415  
 74 53 14  
 SOURCE: Byulleten' izobreteniy i tovarnykh znakov, no. 17, 1965, 84  
 TOPIC TAGS: flaw detection, magnetic method, metal inspection  
 ABSTRACT: This Inventor's Certificate introduces a magnetographic inspection method which consists of applying a ferrotape to the magnetized article being inspected and determining the flaws in the article from the resulting magnetogram. The contrast of the recording on the magnetogram is increased by transverse premagnetization of the ferrotape which is then applied to the article to be inspected in such a way that the magnetic induction vectors of the ferrotape and the article are oppositely directed.  
 SUB CODE: IE,EM/ SUBM DATE: 26Sep64/ ORIG REF: 000/ OTH REF: 000  
 nw  
 Card 1/1 UDC: 620.179.14.05  
 0901.1761

ERLIKH, Yakov Moiseyevich, kand.ekonom.nauk; KOZLOV, Vladimir Sergeyevich, kand.ekonom.nauk; GOL'DBERG, Abram Mikhaylovich, starshiy prepodavatel'; PRIVEZENTSEVA, A.G., red.; PYATAKOVA, N.D., tekhn.red.

[Statistical study of labor productivity in industry; based on materials of the Odessa Economic Council] Statisticheskoe izuchenie proizvoditel'nosti truda v promyshlennosti; po materialam predpriyatii Odesskogo sovnarkhoza. Moskva, Gos.stat. izd-vo, 1959. 129 p. (MIRA 13:2)

(Odessa Province--Productivity accounting)

KOZLOV, V.S., dotsent; ZAKHAROV, F.M.

Methods for eliminating sterility in cows on a state farm. Veterinariia  
40 no.5:43-44 My '63. (MIRA 17:1)

1. Alma-Atinskiy zooveterinarnyy institut (for Kozlov). 2. Glavnyy  
veterinarnyy vrach sovkhoza "Aksay", Alma-Atinskoy oblasti (for Zakha-  
rov).

DENISOV, L.A.; KOZLOV, V.S.

Determining the magnetization force necessary for magneto-  
graphic control. Stroil. truboprov. 8 no.9:19-20 S '63.  
(MIRA 16:11)

1. Gosudarstvennyy montazhnyy trest Glavsantekhmontazha  
Ministerstva stroitel'stva SSSR, Minsk.

DOLGUSHEVSKIY, F.G., dots.; KOZLOV, V.S., dots.; PANCHENKO, V.P., assistant; POLUSHIN, P.I., starshiy prepodavatel'; POSTNIKOVA, G.V., kand. ekon. nauk; ERIKH, Ya.M., dots.; SHENTSIK, Ye.M., red.; IL'YUSHENKOVA, T.P., tekhn. red.

[Statistical study of labor productivity and the uncovering of its potentials in agriculture] Nekotorye voprosy statisticheskogo izucheniia i vyavleniia rezervov proizvoditel'nosti truda v sel'skom khoziaistve. [By] F.G. Dolgushevskii i dr. Moskva, Gosstatizdat, 1962. 189 p. (MIRA 16:1)

1. Prepodavateli Odesskogo kreditno-ekonomicheskogo instituta (for all except Shentsik, Il'yushenkova).  
(Odessa Province--Agriculture--Labor productivity)

DOLGUSHEVSKIY, F.G., dots.; GOL'DBERG, A.M., dots.; KOZLOV, V.S., dots.; PANCHENKO, V.P., assistant; POLUSHIN, P.I., st. prepod.; ERLIKH, Ya.M., dots.; TRUKHANOVA, A.N., red.; IL'YUSHENKOVA, T.P., tekhn. red.

[Problems in economic statistics] Sbornik zadach po ekonomicheskoi statistike. [By] F.G.Dolgushevskii i dr. Moskva, Gosstatizdat, 1963. 311 p. (MIRA 16:9)  
(Statistics--Problems, exercises, etc.)

DENISOV, L.S., inzh.; KOZLOV, V.S., inzh.

Checking the quality of welding in the construction of municipal  
gas lines in the White Russian S.S.R. Stroi. truboprov. 8 no.1:  
20-21 Ja '63. (MIRA 16:5)

1. Trest No.24 Gosudarstvennogo montazhnogo tresta Glavsantekhmontazha  
Ministerstva stroitel'stva SSSR, Minsk.  
(White Russia--Gas pipes--Welding)  
(Gamma rays--Industrial applications)

PAVLOV, I.M.; BELOSEVICH, V.K.; Primali uchastiye: USHAKOV, Ye.V., inzh.;  
KOZLOV, V.S., laborant

Investigating the relationship between the friction coefficient and  
speed and pressure on a special unit. Trudy Inst.met. no.9:139-146  
'62. (MIRA 16:5)

(Friction)



KOZLOV, V.S.

New 5th series transformer stations of the State Institute for the  
Design and Planning of Electric Power Systems. Prom. energ. 18 no.7:  
44-45 J1 '63. (MIRA 16:9)

1. Kazgiprotsvetnet.  
(Electric substations)

KOZLOV, Vasilii Sergeyevich; DOBRONEVSKIY, Ye.D., nauchn. red.

[Black and white electron-beam tubes and external  
auxiliary devices] Chernobelye elektronoluchevye trub-  
ki i vneshnie vspomogatel'nye ustroistva. Moskva, TSent  
nauchno-issl. in-t patentnoi informatsii i tekhniko-ekon.  
issl., 1964. 40 p. (MIRA 18:5)

KOZLOV, V.S. (Minsk)

Increasing the reliability of the MD-11 defectoscope. Stroi.  
truboprov. 10 no.2:29 F '65, (MIRA 18:5)

KOZLOV, V.S., inzh. (g. Chirchik)

A simplified method of determining the maximum power consumption of agricultural consumers. Energetik 13 no.8:17-18 Ag '65. (MIRA 18:9)

DENISOV, I.S., tech.; KOSLOV, V.S., tech.

Magnetographic method of controlling welded joints. Svar. proizv.  
no.7:16-18 JI '65. (MIRA 18:8)

KOZLOV, V.Sh., inzh.

Precast reinforced concrete sectional girders. Prom. stroi. 1  
inzh. soor. 1 no.1:29-32 0 '59. (MIRA 13:12)  
(Girders)

GUTMAN, G.I., inzh.; KOZLOV, V.Sh., inzh.; SYTHNIK, V.I., inzh.

Open standard crane trestles. Prom.stroi. 38 no.1:25-27  
'60. (MIRA 13:5)

(Cranes, derricks, etc.)  
(Trestles)

KOZLOV, V.Sh.; SVESHNIKOV, G.V.

Experimental construction of a building from machine-cast  
elements. Prom.stroi. 39 no.8,35-40 '61. (MIRA 14.9)  
(Kiev--Precast concrete construction)



LIBERMAN, A.D., kand.tekhn.nauk; KOZLOV, V.Sh., inzh.; SVESHNIKOV, G.V.,  
inzh.

Design and construction of a mechanically assembled building for an  
automatic machine-tool plant. Prom. stroi. 39 no.10:42-47 0  
'61. (MIRA 14:10)

1. Nauchno-issledovatel'skiy institut stroitel'nykh konstruktsiy  
Akademii stroitel'stva i arkhitektury USSR (for Liberman).
  2. Kiyevskiy Promstroyproyekt (for Kozlov). 3. Kiyevskiy sovnar-  
khoz (for Sveshnikov).
- (Kiev--Precast concrete construction)

KOZLOV, Vladimir Shalavich; DYKHOVICHNYY, Aleksandr Aleksandrovich;  
GONCHAR, A.S., red.; BERGER, K.V., red.; YEREMINA, I.A.,  
tekhn. red.

[Design of reinforced-concrete elements; mechanical methods]  
Raschet zhelezobetonnykh konstruktsii; mekhanizirovannye me-  
tody. Kiev, Gosstroizdat USSR, 1963. 493 p. (MIRA 16:4)  
(Calculating machines) (Precast concrete)

DENISOV, L.S.; KOZLOV, V.S.

Possibilities for using pulse magnetization in magnitographic  
control of city gas mains. Stroi. truboprov. 9 no.5:23-26 My  
164. (MIRA 17:9)

1. Trest No.24 Santekhmontazh, Minsk.

KORSHUNOV, D.A., inzh.; KOZLOV, V.Sh., inzh.

Standard elements for precast monolithic short shells. Stroi.  
konstr. no.2:5-14 '65. (MIRA 18:12)

1. Nauchno-issledovatel'skiy institut stroitel'nykh konstruktsey SSSR, Kiev (for Korshunov).
2. Kiyevskiy Gosudarstvennyy proyektnyy institut ro obshchestroitel'nomu i sanitarno-tekhnicheskomu proyektirovaniyu promyshlennykh predpriyatiy Gosstroya SSSR (for Kozlov).

KOZLOV, V.Sh., inzh.; SAMOLETOV, M.V., inzh.; KHARITONOV, I.G., inzh.;  
KORSHUNOV, D.A., kand. tekhn. nauk

Standardization of open gantry cranes. Prom. stroi. 42 no.6:  
20-23 '65. (MIRA 18:12)

1. Kiyevskiy gosudarstvennyy proyektnyy institut po obshchestroi-  
tel'nomu i sanitarno-tekhnicheskomu proyektirovaniyy promyshlennykh  
predpriyatiy Gosstroya SSSR (for all except Korshunov). 2. Nauchno-  
issledovatel'skiy institut stroitel'nykh konstruktsiy Gosstroya SSSR  
(for Korshunov).

124-57-1-1077

Translation from: Referativnyy zhurnal, Mekhanika, 1957, Nr 1, p 150 (USSR)

AUTHOR: Kozlov, V. T.

TITLE: Torsion of Compound Beams Made of Rolled Angle Irons  
(Krucheniye sostavnykh sterzhney iz prokatnykh ugolkov)

PERIODICAL: Nauch. zap. Odessk. politekhn. in-ta, 1956, Vol 9, pp 105-110

ABSTRACT: Bibliographic entry

1. Beams--Stresses--Bibliography

Card 1/1

Kozlov, V.T

AUTHORS: Kozlov, V. T., and Dorogostayskiy, Z. E.

TITLE: Instrument for Determining Transverse Deformation of Rod Specimens (Pribor dlya opredeleniya poperechnoy deformatsii sterzhnevyykh obraztsov)

PERIODICAL: Zavodskaya Laboratoriya, 1957, Vol. 23, No. 1, pp. 103-104

ABSTRACT: The article describes an instrument proposed by Prof. A. P. Korobov for determining the transverse deformation where a rod is either stretched or compressed longitudinally. It is based on the application of a transmitting, double-knee lever device clamped on the piece that is being tested. A dial indicator is included in the circuit of the instrument. A diagram showing the principle of the instrument is presented. The instrument is of simple construction, portable and reliable in its functioning.

ASSOCIATION: Odessa Polytechnical Institute (Odesskiy politekhnicheskiy institut)

PRESENTED BY:  
Card 1/2

Instrument for Determining Transverse  
Deformation of Rod Specimens

SUBMITTED:

AVAILABLE:

Card 2/2



KOZLOV, V.T.

Experimental investigation of deformations of noncircular rods  
subjected to free and hindered torsion. Nauch.zap.Od.politekh.inst.14:  
85-95 '59.

(MIRA 14:3)

(Elastic rods and wires)

L 43080-66 EWP(k)/EWT(m)/T/EWP(w)/EWP(t)/ETI IJP(c) JD/EN

ACC NR: AR6014374 (A,N) SOURCE CODE: UR/0137/65/000/011/D005/D005

AUTHORS: Kozlov, V. T.; Vysochin, V. D. 43  
B

TITLE: Improvement of fatigue properties of wire cable by means of elastic-plastic elongation 16 17

SOURCE: Ref. zh. Metallurgiya, Abs. 11D30

REF SOURCE: Sb. Stal'n. kanaty. Vyp. 2. Kiyev, Tekhnika, 1965, 425-427

TOPIC TAGS: wire, wire product, fatigue strength, elongation

ABSTRACT: Results of investigations show that elastic-plastic elongation changes the character of the distribution of residual tensions. The fatigue properties of wire cables are notably improved by the proper choice of drawing technology and elongation stresses. 3 illustrations, 2 tables. L. Kochenova Translation of abstract

SUB CODE: 13,11,20

Card 1/1 *gd*

UDC: 621.771.001

15.9120

11.2210

2209, 1403, 1138 only

86295

S/190/60/002/008/007/017  
B004/B054

AUTHORS:

Tarasova, Z. N., Kaplunov, M. Ya., Kozlov, V. T.,  
Klauzen, N. A., Dogadkin, B. A.

TITLE:

Interaction of Sulfur With Natural Rubber Under the Action  
of Ionizing Radiation

PERIODICAL:

Vysokomolekulyarnyye soyedineniya, 1960, Vol. 2, No. 8,  
pp. 1201-1206

TEXT: The authors study the problem of production of radiation-resisting rubbers, the conditions for a common vulcanization of irradiated and sulfurated rubbers, and the modification of rubbers treated with radiation. The present paper gives the first informative results of investigation of the effect of radiation by  $Co^{60}$  on rubber in the presence of sulfur. A considerable sulfur addition occurred at  $25^{\circ}C$ , and was accelerated by an increase in the radiation dose and temperature, particularly by addition of hexane chloro ethane. In thermal vulcanization, the admixture of chloro derivatives showed no effect on sulfur addition. The presence of sulfur delays the structuration as compared with rubber without sulfur admixture.

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Interaction of Sulfur With Natural Rubber Under S/190/60/002/008/007/017  
the Action of Ionizing Radiation B004/B054

But structuration increases also here between  $-80^{\circ}\text{C}$  and  $+100^{\circ}\text{C}$  with increasing temperature. Pure rubber showed at  $50^{\circ}\text{C}$  a reversion of the structuration process, which was not observed in the presence of sulfur in the temperature range investigated. A study of the infrared spectra in argon of irradiated rubbers with and without sulfur showed a decrease in intensity of the  $840\text{ cm}^{-1}$  band due to a reduced degree of nonsaturation. This effect was more intense in the presence of sulfur. The decrease in intensity of the  $2940$  and  $1450\text{ cm}^{-1}$  bands due to a reduced number of  $\text{CH}_2$  groups or ring formation was, however, more intense in the presence of sulfur. An investigation of the sulfur exchange at  $120^{\circ}\text{C}$  in irradiated rubber tagged with radioactive sulfur, carried out by a method described in Ref. 7, showed that about 40% of sulfur is exchangeable. This amount does not depend on the radiation dose (up to 100 megareöntgens). The high degree of exchangeability is ascribed to a formation of polysulfide groups. Sulfurous rubbers with addition of hexachloro ethane showed, on irradiation with 20 megareöntgens, maximum values of tensile strength (about  $130\text{ kg/cm}^2$ ) and of elongation. When irradiating pure rubber, a maximum (about  $100\text{ kg/cm}^2$ ) is only attained at 50-70 megareöntgens. Sulfurous irradiated vulcanizates showed a faster stress relaxation than irradiated vulcanizates free from

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Interaction of Sulfur With Natural Rubber Under S/190/60/002/008/007/017  
the Action of Ionizing Radiation B004/B054

sulfur. The authors assume that sulfur addition leads to a more homogeneous and regular structure since secondary reactions causing chain ramification are inhibited. There are 7 figures and 7 references: 3 Soviet, 3 US, and 1 British.

ASSOCIATION: Nauchno-issledovatel'skiy institut shinnoy promyshlennosti  
(Scientific Research Institute of the Tire Industry)

SUBMITTED: March 24, 1960

X

Card 3/3

S/844/62/000/000/095/129  
D204/D307

AUTHORS: Dogadkin, B. A., Tarasova, Z. N., Kaplunov, M. Ya., Kozlov, V. T., Klauzen, I. A. and Matveyev, V. S.

TITLE: The interactions of sulfur with polymers under the action or irradiation

SOURCE: Trudy II Vsesoyuznogo soveshchaniya po radiatsionnoy khimii. Ed. by L. S. Polak. Moscow, Izd-vo AN SSSR, 1962, 554-562

TEXT: The interactions of S with natural rubber, 1,4-cis-polybutadiene, butadiene-styrene and butyl rubber was studied, under irradiation from a Co<sup>60</sup> source. S added on to natural rubber at 25 - 100°C and to butadiene-styrene rubber and polyethylene at 25°C, under argon, in amounts increasing with the dose (0 - 120 Mr), the rate of addition being faster at higher temperatures. At room temperature the amount of S added on is independent of the initial S-content in the starting mixture (1 - 10% by weight). The addition

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The interactions of ...

S/844/62/000/000/095/129  
D204/D307

was promoted by  $C_2Cl_6$ . The presence of S hindered the development of structurization, which was, however, promoted by raising the temperature from -80 to 100°C. Pure natural rubber developed cross-linking only up to ~50°C, above which temperature the process was reversed; this reversal was not observed in the presence of 2% S, up to 100°C. The presence of 1 - 4% S in CKC-30AM (SKS-30AM) butadiene-styrene rubber led only to a slight reduction in the degree of cross-linking on irradiation. The loss of unsaturation and  $-CH_2-$  groups on irradiation was studied (by ir spectroscopy) on natural rubber both in the presence and absence of S, and was found to be greater in the latter case. The S adds on in a form capable of isotopic exchange with elemental sulfur. Initially 70% of the added sulfur may be exchanged in natural and butadiene-styrene rubbers; this value falls with irradiation to a constant 40% at 50 - 120 Mr. Radiational vulcanizates of natural rubber exhibit increased tensile strength when the polymer contains 2% S, particularly at 100°C; in general, the strength increases with the dose of irradiation. The best strengths were obtained for a mixture of

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The interactions of ...

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D204/D307

natural rubber, S, and  $C_2Cl_6$ . The sulfur is believed to interact with the polymeric radicals<sup>6</sup> (formed on irradiation by C-C fission) to form polysulfides which (a) lower the thermomechanical stability, and (b) prevent recombination reactions and reactions of radicals formed with C=C, thus hindering the development of branched structures. There are 12 figures.

ASSOCIATION: NII shinnoy promyshlennosti (NII of the Tire Industry)

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S/190/62/004/008/010/016  
B101/B180

AUTHORS: Tarasova, Z. N., Fogel'son, M. S., ~~Kozlov, V. T.~~  
Kashlinskiy, A. I., Kaplunov, M. Ya., Dogadkin, B. A.

TITLE: Epr study of the radiation vulcanization of rubber in the  
presence of sulfur and hexachlor ethane

PERIODICAL: Vysokomolekulyarnyye soyedineniya, v. 4, no. 8, 1962,  
1204-1209

TEXT: Recorded epr spectra were used to study the formation of free  
radicals during the radiation polymerization of natural rubber (NR) and  
mixtures of NR with 2wt.% sulfur or 10wt.%  $C_2Cl_6$ . Irradiation was

conducted at  $-196 - +20^{\circ}C$  with  $Co^{60}$  at a dose of 6 - 11 Mr. Results:

(1) Long-lived radicals with an initial concentration of  $(1-2.5) \cdot 10^{14} mg^{-1}$   
form in NR and its mixtures with S or  $C_2Cl_6$  at  $20^{\circ}C$  and 6-8Mr. ✓

(2) Radicals of different lives form with irradiation at  $-196^{\circ}C$ . Their  
initial concentrations in NR, NR +  $C_2Cl_6$  and in NR + S are

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Epr study of the radiation ...

S/190/62/004/008/010/016  
B101/1180

( $4.9 \pm 0.7$ )  $\cdot 10^{15} \text{ mg}^{-1}$ , ( $11 \pm 2$ )  $\cdot 10^{15} \text{ mg}^{-1}$ , and ( $2.6 \pm 0.6$ )  $\cdot 10^{15} \text{ mg}^{-1}$ , respectively. The inhibiting effect of S is due to delocalization of an electron in the  $S_8$  ring. (3) If the  $\text{NR} + \text{C}_2\text{Cl}_6$  sample irradiated at  $-196^\circ\text{C}$  is slowly brought to room temperature, structuration occurs near the vitrification temperature ( $-70^\circ\text{C}$ ). Short-lived radicals disappear and the concentration of free radicals approaches the room temperature level. (4) Gradual heating of the  $\text{NR} + \text{S}$  sample yields new short-lived radicals with a g factor of  $2.027 \pm 0.003$  which is typical of S radicals. The radicals whose concentration reaches a maximum of approximately  $6 \cdot 10^{14} \text{ mg}^{-1}$  at  $-80^\circ\text{C}$  are formed by reaction between NR and S, the  $S_8$  ring being ruptured. (5) After irradiation, crystalline  $\text{C}_2\text{Cl}_6$  showed an intensive epr signal, from which it is assumed that various types of radical are formed. The formation of  $\text{CCl}_3$  radicals was confirmed by the analytical detection of chloroform. (6) Structuration of NR irradiated at low temperatures is supported by  $\text{C}_2\text{Cl}_6$  and impeded by S which increases

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Epr. study of the radiation ...

S/190/62/004/008/010/016  
B101/B180

the static strength of the radiation vulcanizate. (7) Crystalline S  
showed only a weak epr signal. There are 5 figures.

ASSOCIATION: Nauchno-issledovatel'skiy institut shinnoy promyshlennosti  
(Scientific Research Institute of the Tire Industry)

SUBMITTED: May 12, 1961

Card 3/3

L 17560-65 EWD(j)/EWT(m)/EPP(c)/EPP(n)-2/EPR/EWP(j)/T/EWA(h)/EWA(l) PC-14/  
 PR-11/PS-11/PEB/Pu-11 GG/RH

ACCESSION NR: AP4049784

S/0138/64/000/011/0028/0033

AUTHOR: Kaplunov, M. Ya.; Khozak, V. K.; Kozlov, V. T.; Sobolev, V. S.; Tarazova, Z. N.; Borisov, V. A.; Karpov, V. L.; Dogadkin, B. A.

TITLE: Thermoradiation vulcanization of tires ✓

SOURCE: Kauchuk i rezina, no. 11, 1964, 28-33

TOPIC TAGS: thermoradiation vulcanization, rubber structure, sulfur vulcanization, tire wear, thermal aging

ABSTRACT: The effectiveness of the method of thermoradiation vulcanization was investigated from the point of view of increasing the quality of the tires. The radiation unit consisted of 18 spent, heat-liberating elements from an atomic reactor. The total activity amounted to 76,000 gram-equivalents of radium. Not more than six 5.60-15 tires could be treated at one time in a cylindrical vat with a hermetically closed cover. The tires had a reduced content of vulcanizing agent; one contained a sensitizer of radiation structuring-hexachlorethane. Irradiation was in an argon medium at 0.35 atm pressure. The temperature did not exceed 40C. Radiation doses amounted to 5, 9, 13, and 20 Mrad. The resulting vulcanizate had the optimum relationship of crosslinks of the type -C-C- and

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17560-65

ACCESSION NR: AP4048784

11  
-C-Sy-C. The destructive processes as well as processes of oxidation and trans-isomerization were less than during sulfur and radiation vulcanization. The relative content of rubber in the "active" portion of the vulcanization network was high. The rubbers had much higher elasticity and strength, as well as increased resistance to thermal aging and wear. Accelerated road tests showed 15-20% greater wear resistance than standard tires. The relationship between structurization and destruction was determined by A. S. Ly\*kin, N. D. Stepanov, V. Ye. Lezhichiy and L. M. Dunayev (member of NIFKhl) took part in setting up the apparatus. The design of the apparatus was developed under the guidance of G. N. Lisov (member of NIFKhl). Measurements of radioactivity and dosimetry were carried out by A. G. Vasilyev and V. Ye. Drozdova (member of NIFKhl). The TsZL MShZ took part in manufacturing the tires. Orig. art. has 5 figures and 4 tables.

ASSOCIATION: Nauchno-issledovatel'skiy institut shimoy promy\*shlennosti (Scientific Research Institute for the Tire Industry); Nauchno-issledovatel'skiy fiziko-khimicheskyy institut im. L. Ya. Karpova (Scientific Research Institute for Physics and Chemistry)

SUBMITTED: 00

ENCL: 00

SUB CODE: MT

NO REF SOV: 005

OTHER: 001

Card

2/2

L 15191-66 EWT(m)/EPF(n)-2/EWP(j)/T/EWA(h)/EWA(1) GG/GS/RM

ACC NR: AT5023444

SOURCE CODE: UR/0000/65/000/000/0220/0229

AUTHOR: Kozlov, V. T.

ORG: none

TITLE: Radiative cross linking of rubber-like polymers

SOURCE: Simpozium po elementarnym protsessam khimii vysokikh energiy. Moscow, 1963. Elementarnyye protsessy khimii vysokikh energiy (Elementary processes of the chemistry of high energies); trudy simpoziuma. Moscow, 1965, 220-229

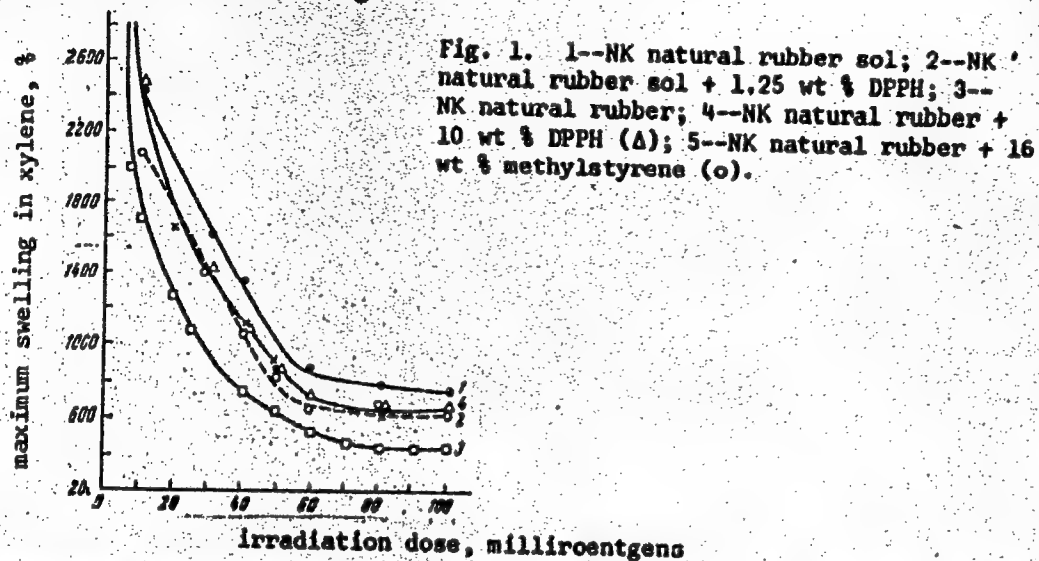
TOPIC TAGS: radiation polymerization, radical polymerization, synthetic rubber, isoprene, polychloroprene, polybutadiene, EPR, natural rubber, irradiation effect, gamma irradiation, free radical

ABSTRACT: The effect of irradiation on cross linking of NK natural rubber, SKI-3 polyisoprene rubber, KhK chloroprene rubber, SKD polybutadiene rubber, SKS-30 and ARM butadiene-styrene rubbers, SKMS-30 and ARKM butadiene-methylstyrene rubbers, and SKEP ethylene-propylene rubber is studied. The yields of free radicals under  $\gamma$ -irradiation of solid rubbers ( $-196^{\circ}\text{C}$ ) were measured by EPR technique at  $-196^{\circ}\text{C}$  and the yields of cross linking were measured in terms of maximum swelling in xylene at room temperature. Radiative cross linking of natural rubber and the sol fraction of

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ACC NR: AT5023444

natural rubber with various contents of diphenylpicrylhydrazine (DPPH) as a function of irradiation dose is shown in fig. 1.



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ACC NR: AT5023444

The radiative cross linking of rubbers proceeds mainly via the ionic-molecular mechanism. It was found that irradiation of rubbers results in an initial loss of free radicals due to recombination and that for each type of rubber there is an optimum irradiation dose for maximum free radical buildup and cross linking. Orig. art. has: 3 figures, 1 table.

SUB CODE: 07,11/ SUBM DATE: 23Feb65/ ORIG REF: 009/ OTH REF: 001

Card 3/3 *rmc*



TARASOVA, Z. N.; DOGADKIN, B. A.; LYKIN, A. S.; KAPLUNOV, M. Ya.; KHOZAK, V. K.;  
KOZLOV, V. T.; SOBOLEV, V. S.; KLAUZEN, N. A.

"Struktura i svoystva vulkanizatorov, poluchennykh kombinirovannym deystviem  
sery i ioniziruyushchikh izlucheniya."

report submitted for 35th Intl Cong, Industrial Chemistry, Warsaw, 15-19  
Sep 64.

Nauchno-issledovatel'skiy institut shinnoy promyshlennosti, Moscow.

YANSHIN, A.L., akademik; YAKOVLEV, Yu.Ya. (Moskva); PLOTKIN, S.Ya., kand.tekhn. nauk (Moskva); GVOZDETSKIY, N.A., prof.; NOVIK, I.B. (Moskva); SVINTSITSKIY, V.N. (Moskva); KOZLOV, V.V. (Moskva); SULIDI-KONDRAT'YEV, Ye.D. (Moskva); BELOV, S.V. (Leningrad)

Books. Priroda 54 no.7:56-57; 71; 104-111 J1 '65.

(MIRA 18:7)

1. Moskovskiy gosudarstvennyy universitet im. M.V.Lomonosova (for Gvozdetskiy).

KOZLOV, Vadim Valentinovich

Legal-medical significance of Gunsmith Lubricants concerning  
Bullet Wounds (experimental research)

Dissertation for candidate of a Medical Science degree. Chair of Legal  
Medicines (head, Asst. Prof. I.V. Skopin) Saratov Medical Institute, 1957

KOZLOV, V.V. (Vadim Valentinovich)

Significance of the impregnation of skin nerve fibers with silver  
for the diagnosis of intravital injuries. Sud.-med.ekspert. 3 no.1:  
18-21 Ja-Mr '60. (MIRA 13:5)

1. Kafedra sudebnoy meditsiny (zav. - dotsent I.V. Skopin [deceased])  
Saratovskogo meditsinskogo instituta.  
(WOUNDS AND INJURIES) (SKIN--INNERVATION)

KOZLOV, V.V.

We are improving the remote control of deep wells. Neftainik 3 no.4:  
26 Ap '58. (MIRA 11:5)

1. Ispolnyayushchiy obyazannosti nachal'nika konstruktorskogo byuro  
elektromontazhnogo tsakha neftepromyslovogo upravleniya Starogrozneft'.  
(Oil wells) (Remote control)

AFANAS'YEV, P.M., inzh.; BORODICH, M.K., inzh.; DOLGOV, V.A., inzh.;  
KOZLOV, V.V., inzh.

Manufacture of wire-reinforced concrete articles on the TP-906  
unit in Krasnodar. Bet.1 zhel.-bet. no.6:254-257 Je '61.

(MIRA 14:7)

(Krasnodar--Prestressed concrete)

BORODICH, M.K., nauchnyy sotrudnik; AFANAS'YEV, P.M., nauchnyy sotrudnik;  
KOZLOV, V.V.

Tensioning station of very simple design. Bet. 1 zhel.-bet.  
8 no.6:276 Je '62.

(MIRA 15:7)

1. Krasnodarskiy filial Nauchno-issledovatel'skogo instituta  
po stroitel'stvu Ministerstva stroitel'stva RSFSR (for Borodich,  
Afanas'yev). 2. Glavnyy inzhener zavoda No.3 Krasnodarskogo  
sovnarkhoza (for Kozlov).

(Prestressed concrete)

KOZLOV, Vasil'y Vasil'yevich; BEDRAK, T.V., red.; DATRIYEVA, Ye.U.,  
tekn. red.

[On multinational collective farm] V mnogonatsional'nom  
kolkhoze. Ordzhonikidze, Severo-osetinskoe knizhnoe izd-vo,  
1959. 18 p. (MIRA 16:7)

(Collective farms)

KOZLOV, V.V. (Moskva); SULIDI-KONDRAT'YEV, Ye.D. (Moskva)

Before the flight into the unknown; collection of papers "New discoveries about the moon." Reviewed by V. V. Kozlov, E. D. Sulidi-Kondrat'ev.  
Priroda 53 no.4:118 '64. (MIRA 17:4)



KOZLOV, V.V., kand.med.nauk

Unusual transpositions of internal organs in automobile accident injuries. Sud. - med. ekspert. 6 no.3:51-52 J1-S'63.

(MIRA 16:10)

1. Kafedra kriminalistiki (zav. - dotsent D.P.Rasseykin) Saratovskogo yuridicheskogo instituta.

(TRAFFIC ACCIDENT INVESTIGATION) (TRAUMATISM)

1ST AND 2ND ORDERS

PROCESSES AND PROPERTIES INDEX

25

COMMON ELEMENTS

OPEN

ADSORPTION OF MINERAL DYES ON WOOL FIBER FROM AQUEOUS SUSPENSIONS. M. A. IL'INSKII AND V. V. KUZLOV. *J. Russ. Phys.-Chem. Soc.* 62, 665-72 (1930).--The object was to study the adsorption of mineral dyes ( $PbO$ ,  $PbCrO_4$ ,  $(PbCrO_4)_2$ ,  $Pb(OH)_2$ , ultramarine) on woolen fabric which has been technically washed with soda and soap soaps. When woolen cloth is passed through an aq. suspension of mineral dyes the latter settle on the fiber in an even layer. The reaction is completed in the cold in 2-10 min. The resultant dyeing is substantially fast to water. The particular object of the expts. was to study quant. the stages of adsorption as functions of the concn., temp., time and diln. as well as adsorption on acidified cloth, the effect of electrolytes, and the degree of reversibility of the process. For the quant. studies, air-dried  $PbCrO_4$  (0.37%  $H_2O$ ) was employed and a cloth of 11.62% moisture (av.). For the qual. studies the other substances were employed. Adsorption proceeds better in ordinary  $H_2O$  than in distd.  $H_2O$ . The presence of mineral salts in ordinary water makes the adsorption complete and gives the dyeing a brighter shade. The adsorption increases rapidly with time at first, but gradually approaches a const. value; it shows a typical curve. As the concn. increases, the wt. adsorbed increases linearly and rapidly at first up to a certain point; then further increase abruptly ceases and the curve becomes flat. As temp. rises, the adsorption increases but slightly. As concn. of electrolytes increases, adsorption first decreases, then increases, then again decreases. As the diln. increases, the wt. of dyestuff adsorbed decreases but slowly. After triple washing the cloth retained 60% of the dyestuff initially adsorbed. As the concn. of acid increases, the quantity of acid adsorbed by the fabric increases up to a certain value, whereupon it becomes const. The dyed acidified fabric at once shows an increase of 13 to 25% in adsorbed wt. of dye over non-acidified fabric. However, as quantity of acid adsorbed increases, the wt. of dyestuff adsorbed does not increase very rapidly. D. K.

ASB-SLA METALLURGICAL LITERATURE CLASSIFICATION

120000 MAP ONE 381

120000 MAP ONE 381

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27

*Some wetting materials. V. V. Korlov and T. D. Nefedova. *Amilinokrasochadaya Prom.* 9, 84 7(1933). In the prepn. of wetting substances the best results were obtained by simultaneous sulfonation of  $C_{11}H_{24}$  with 98% fuming  $H_2SO_4$  and condensation with fusel oil, iso-AmOH and PrOH (Brit. pat. 250,241, C. A. 21, 010), whereby a solid product could be isolated only with fusel oil. The product possesses good wetting and emulsifying properties, and in dyeing of cotton and especially of wool fabrics produces very level effects.*

Chas. Blanc

ASAC-51.0 METALLURGICAL LITERATURE CLASSIFICATION

**CIA-RDP86-00513R0008259100**

1ST AND 2ND ORDERS										3RD AND 4TH ORDERS									
PROCESSING AND PROPERTIES INDEX																			
<p>Laboratory control of <math>\beta</math>-naphthol production at the  Frumze Dzerzhinsk works. V. V. Kozlov and A. A. Cher-  kasski. <i>Antimirovskoye</i> <i>Prizh.</i> 6, 156-60(1934).—  A general method of analysis is described. C. B.</p>																			
<p>ASB-SLA METALLURGICAL LITERATURE CLASSIFICATION</p>																			
MATERIALS INDEX										PROCESSING AND PROPERTIES INDEX									

Light-fast basic dyes with heteropoly compounds (Pantallacks). V. V. Kozlov. *Anilinokhromy i Prom.* 5, 120-35, 180-92 (1935); *Chem. Zentr.* 1936, 1, 2443. Topics discussed include lab. expts. on the prepn. of fusal dyes from complex phosphotungstic, phosphomolybdic and silicotungstic acids of Russian manuf., tests of the fastness to light of the pigments so obtained both in the pure form and on carriers. (Al gels, BaSO<sub>4</sub>, kaolin), and suggestions as to their use. W. A. Moore

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ASH-SLA METALLURGICAL LITERATURE CLASSIFICATION

1ST AND 2ND CODES										3RD AND 4TH CODES									
PROCESSES AND PROPERTIES INDEX																			
<p>BC</p> <p>METHODS OF DYE ANALYSIS. I. ANALYSIS OF QUINONOID DYES BY THE TITANIUM METHOD. Y. V. Keslov (J. Appl. Chem. Russ., 1958, 8, 1478--1483).--Standard <math>TiCl_3</math> or <math>Ti_2(SO_4)_3</math> solutions change their titre by 0.000064 N per day; the oxidised solutions can be periodically regenerated by adding Zn. The dyes are best titrated in 2% EtOH containing 10% of Na K tartrate and approx. 1% of dye; the results tend to be high, by 2.5%. Titration with <math>CrCl_2</math> in place of <math>TiCl_3</math> does not give satisfactory results, owing to the indefinite end point and to the slowness of the reaction with certain dyes. (M-violet, auramines, rhodamines); the most readily reduced are oxazines and thiazine dyes. R. T.</p>																			
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1ST AND 2ND ORDERS																										3RD AND 4TH ORDERS																									
COMMON ELEMENTS																										SPECIAL ELEMENTS																									
<p>Active manganese dioxide from pyrolusite. V. V. Kozlov and T. I. Vol'ison. <i>J. Chem. Ind. (Moscow)</i> 12, 1167-71 (1935).—The practical details for the extra. of pyrolusite with HCl, pptn. of Mn(OH)<sub>2</sub> by NaOH and oxidation of the Mn(OH)<sub>2</sub> with Cl<sub>2</sub> to give MnO<sub>2</sub> of high oxidizing power are described. H. M. Leicester</p>																										<p>18</p>																									
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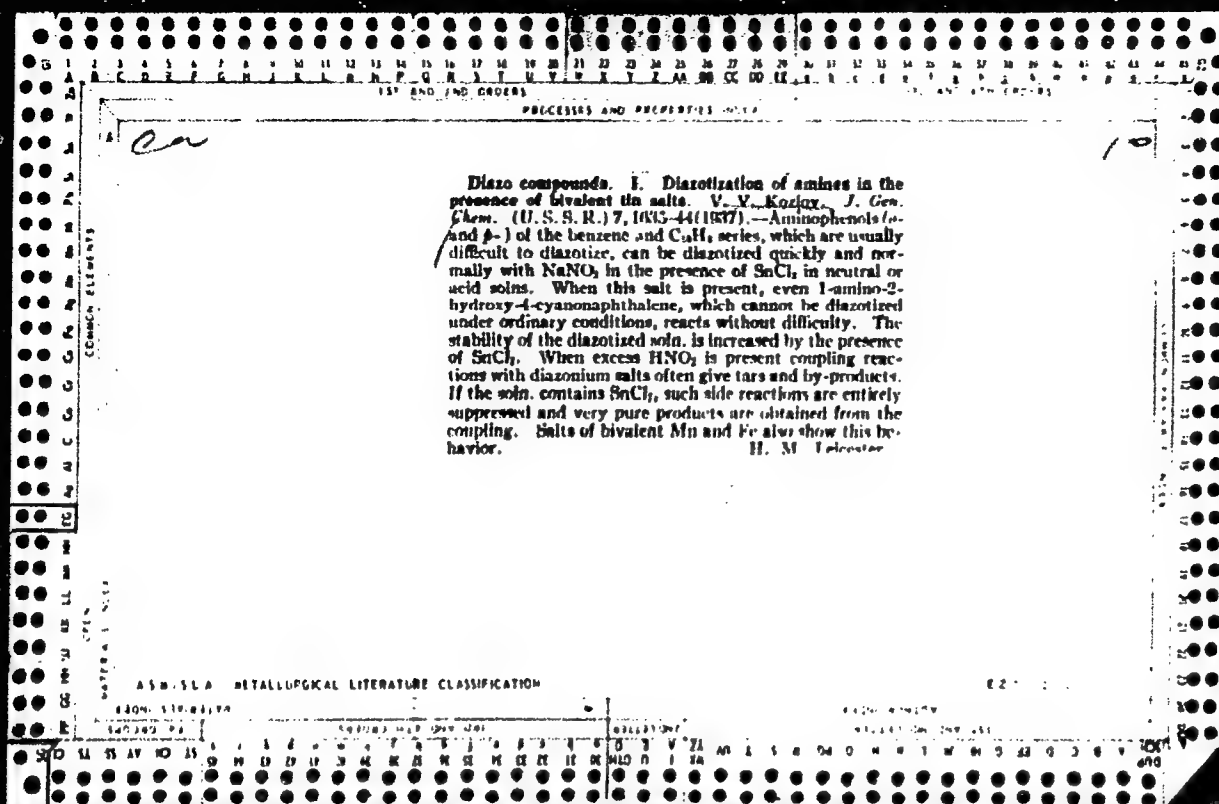
COMMON ELEMENTS										COMMON VARIABLE WEIGHTS									
B C										B-II-4									
<p><b>Methods of dye analysis.</b> II. Analysis of quinonoid dyes by means of heteropoly-acids.            III. Analysis of quinonoid dyes by means of permanganate titration. V. V. Kozlov (J. Appl. Chem. Russ. 1936, 9, 669-647, 716-734; cf. B., 1936, 131).—[I.: Basic quinonoid dyes can be approx. determined by titration with silicotungstic acid (I); phosphotungstic and molybdic acids (II) are less suitable. A more exact method consists in adding excess of (I) to the solution, filtering, drying the washed ppt. to const. wt., and igniting and weighing the residue. Acidic quinonoid dyes may be determined by ppn. with HgCl<sub>2</sub> in presence of (II), followed by ignition of the weighed dried ppt., but ppn. is less complete than in the case of basic dyes.            III. 1 ml. of a 1% solution of the dye is added to 500 ml. of H<sub>2</sub>O and 30 ml. of H<sub>2</sub>SO<sub>4</sub>, and the solution is titrated at 90° with 0.1N-KMnO<sub>4</sub> (decolorization, followed by a pink coloration). 50 ml. of a 0.1% solution of the dye are shaken for 1 hr. with 10-12 g. of kaolin and 100 ml. of H<sub>2</sub>O, 30 ml. of the filtrate are added to 470 ml. of H<sub>2</sub>O and 30 ml. of H<sub>2</sub>SO<sub>4</sub>, and the solution is titrated as above. The difference between the titrations corresponds with the content of dye in the given sample. The products of oxidation are benzoquinone, N<sub>2</sub> CO<sub>2</sub> and H<sub>2</sub>O.] R. T.</p>																			
ASTM-SLA METALLURGICAL LITERATURE CLASSIFICATION																			
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10

Stable preparations of diazo compounds. V. V. Korlov.  
 Russ. Zh. Khim., Sept. 30, 1937. Aq. solns. of salts of  
 aromatic diazo- or tetrazo compds. are treated with hetero-  
 poly acids or their salts free of P, e. g., with phosphomolyb-  
 dates and the products are sepd. in the usual manner.

AND U.S. METEOROLOGICAL LITERATURE CLASSIFICATION

**CIA-RDP86-00513R0008259100**



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CA

Light-sensitive nitro compounds N. N. Vorobeychikov and V. V. Kiselev, *Dokl. Akad. Nauk SSSR* 14, 400-401 (1957); cf. C. A. 51, 4110<sup>u</sup>, 8326<sup>u</sup>. A summary of previous publications with theoretical and practical discussion of the results. Chas. Blanc

ASS-5LA METALLURGICAL LITERATURE CLASSIFICATION

10

**Light-sensitive nitro compounds. III. meso-Nitroanthracene-1-sulfonic acid.** N. N. Vorobtsov and V. V. Kislav. *J. Gen. Chem.* (U. S. S. R.) 7, 720-726 (1937); cf. C. A. 27, 2440. The prepn. of nitroanthracene-1-sulfonic acid (I) by the method of Barnett and Matthews (C. A. 18, 2120) does not succeed unless the mixt. is kept at 10-15° during nitration. I cannot be prepd. by sulfonation of the nitroanthracene, since only anthraquinone is formed. Treatment of I with HCl and HClO<sub>4</sub> gives a dichloride which is oxidized by CrO<sub>3</sub> to  $\alpha$ -chloroanthraquinone. This shows that I has the meso-structure. Reduction of I with Zn and H<sub>2</sub>SO<sub>4</sub> gives the corresponding amine. When this is diazotized and heated with POCl<sub>3</sub> it gives a sulfone, m. 184-9°, which is hydrolyzed by NaOH to 9-anthranol-1-sulfonic acid. Thus, I is 9-nitroanthracene-1-sulfonic acid. Its Na, Ca, Cu, Hg, Ba, Pb, Ag and ferric salts are described. meso-Nitroanthracene-2-sulfonic acid (II) must also be cooled during its prepn. by the method of B. and M. It cannot be prepd. by nitration of anthracene-2-sulfonyl chloride. Its Cu, Ba, Ag, Pb and ferrous salts are described. When I is exposed to light, it forms a dark compd. while under the same conditions, II gives a color-

less compd. IV. The action of light on water solutions of nitrosulfonic acids and on their color on wool and paper (1941, 904-1044. Salts of 1-nitro-8-naphthalenesulfonic acid (I) in aq. soln. are autocatalytically reduced by light to give dark compds. The reaction is faster in neutral or alk. solns. than in acids. The Mg salt is more active than the Na salt or free I. The change occurs better when the salt is deposited on wool than on silk or cotton. The presence of oxidants hinders the reaction, and hence it goes best in a N<sub>2</sub> or CO<sub>2</sub> atm. The 1,8-isomer is more sensitive to light than its 1,2- or 1,7-isomers. In general, compds. in which NO<sub>2</sub> and SO<sub>3</sub>H are closest to each other are the most sensitive. When the substituents are in the quinogenic (1,5 and 1,7) positions, the acid is less sensitive than when they are in the non-quinogenic (1,6 and 1,8) positions. Among the dinitrodiphenyl disulfides and dinitrodinaphthyl disulfides and the nitrobenzenesulfonic acids, the *o*-isomers are the most sensitive, but none are as active as I. When paper soaked in these solns. and exposed to light is rinsed with dil. Na<sub>2</sub>Cr<sub>2</sub>O<sub>7</sub> soln., the colors are set better than if pure H<sub>2</sub>O is used. The salts of the *peri*-naphthalene compds. desensitize AgBr emulsions.

H. M. Leicester

ASB-15A METALLURGICAL LITERATURE CLASSIFICATION

SECTION	SUBSECTION	SUBSECTION	SUBSECTION
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PREPARED AND PROPERTY MARKS

10

Light-sensitive nitro compounds. V. The nature of the products of the photoreaction of *peri*-nitronaphthalene-sulfonic acid. N. N. Vorozhtsov and V. V. Koslov. *J. Gen. Chem.* (U. S. S. R.) 7, 1610-13 (1937); *ibid.* C. A. 31, K149<sup>18</sup>.—When 1,8-C<sub>10</sub>H<sub>6</sub>(NO<sub>2</sub>)SO<sub>3</sub>H solids are exposed to sunlight, a dark ppt. comes down. It is probably 1-amino-8-(8-nitro-1-naphthylsulfonyl)-2-naphthol, although it may be an isomer containing another OH group and an NO instead of a NO<sub>2</sub> group. When the Mg salt of the same acid is exposed to sunlight for 35 hrs., the dark ppt which results is probably the cyclic Mg salt of 2-hydroxy-1,1'-azonaphthalene-8,8'-disulfonic acid. If the exposure lasts 1.0–1.5 yrs., a dark, insol. polymeric product is obtained.  
H. M. Leicester

METALLURGICAL LITERATURE CLASSIFICATION

NON-FERROUS METALS  
IRON-STEEL  
TITANIUM  
ALUMINUM  
COPPER  
ZINC  
NICKEL  
COBALT  
MANGANESE  
CHROMIUM  
VANADIUM  
MOLYBDENUM  
WOLFRAM  
BORON  
CARBON  
SILICON  
GERMANIUM  
ANTIMONY  
ARSENIC  
SELENIUM  
TELLURUM  
POLYMERICS  
COMPOUNDS OF METALS  
OTHER INORGANIC COMPOUNDS  
ORGANIC CHEMISTRY  
PHYSICAL CHEMISTRY  
CHEMICAL ENGINEERING  
MINERAL PROCESSING  
FUELS  
METALLURGY OF NON-FERROUS METALS  
METALLURGY OF IRON-STEEL  
METALLURGY OF TITANIUM  
METALLURGY OF ALUMINUM  
METALLURGY OF COPPER  
METALLURGY OF ZINC  
METALLURGY OF NICKEL  
METALLURGY OF COBALT  
METALLURGY OF MANGANESE  
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PROCESSES AND PROPERTIES INDEX

Analysis of dyes. V. Analysis of insoluble azo dyes and color lacquers. V. V. Kozlov and A. V. Simanovskaya. *J. Applied Chem.* (U. S. S. R.) 10, 684-84 (in French 093) (1937); cf. C. A. 31, 3203a, 6000d. Color lacquers are analyzed by the Linprecht method (Ber. 11, 35 (1878)) or by the Gattoshinskaya method (C. A. 27, 6083). To analyze insol. azo dye (org. pigments) 0.1 g. was dissolved in 25 cc. of  $H_2SO_4$  (d. 1.84) by heating on a water bath for 30 min. The resulting soln. was dild. with 400 cc. of water and, after all air in the flask was displaced by  $CO_2$ , was treated with 40-70 cc. of  $SnCl_4$  for 45 min. to 2 hrs. until there was a sharp change of color while heating on a boiling water bath. The excess of the reducing agent was back-titrated in the usual manner.  $TiCl_3$  and  $Ti_2(SO_4)_3$  can be used as the reducing agents instead of  $SnCl_4$ , but the results are less accurate than with  $SnCl_4$ . Paints are analyzed in the same way, since the oil does not interfere with the analysis.

A. A. Polgorny

ASB-SLA METALLURGICAL LITERATURE CLASSIFICATION

SABORD #4										SABORD #19 ONV GSE										SABORD #1										SABORD #2 ONV GSE									
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PROCESSES AND PROPERTIES

*p*-Anthraquinonesulfonyl chloride. V. V. Kurov and K. G. Plonova. Russ. 52,419, Jan. 31, 1958. Anthraquinone is treated with chlorosulfonic acid in the presence of sulfates of metals of the first and the second group of the periodic system, or of salts of *p*-anthraquinonesulfonic acid or Hg compds.

ASS-SLA METALLURGICAL LITERATURE CLASSIFICATION

TECHN. SYMBOLISM

SENDING NO.

TELEGRAM NO. AND CODE

COLLECTOR

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DATE

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REMARKS

CA

PROCESS AND PROPERTIES INDEX

Lacquer pigments. N. V. Vorozhtsov, Jr., V. K. Kuz-  
lov, A. V. Simanovskaya and A. T. Troshchenko. Russ.  
32,304, March 31, 1938. Azo dyes obtained by coupling  
of p-hydroxybiphenyl with diazo compds. free of salt  
forming groups are treated with a substrate such as Al.  
(SO<sub>3</sub>)<sub>2</sub> or BaCl<sub>2</sub>.

ASD 114 METALLURGICAL LITERATURE CLASSIFICATION

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Common Elements		PROCESSING AND PROPERTIES INDEX		Common Variables - Metals	
<div style="position: absolute; top: 10px; left: 10px; font-size: 2em;">Co</div> <div style="position: absolute; top: 10px; right: 10px; font-size: 2em;">25</div> <div style="position: absolute; top: 300px; left: 300px; text-align: center;"> <p><b>Azo dyes.</b> V. V. Korlov. Russ. 53,444, July 31, 1938. Small amounts of salts of metals that can be oxidized to a higher stage, e. g., stannous, ferrous or manganous salts, are added to diazo solns. before coupling with the usual components.</p> </div>		<p><b>ASTM-AIA METALLURGICAL LITERATURE CLASSIFICATION</b></p>		<p><b>ASTM-AIA METALLURGICAL LITERATURE CLASSIFICATION</b></p>	
<p>COMMON ELEMENTS</p>		<p>COMMON VARIABLES - METALS</p>		<p>COMMON VARIABLES - METALS</p>	

11. AND 12. INDEX										13. AND 14. INDEX									
PROCESSES AND PROPERTIES INDEX																			
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<p>Colorimetric and nephelometric methods of analysis of quinacridone dyes and their leuco-bases. V. V. Kozlov (Zavod. Lab., 1938, 7, 1267-1270).—The concn. of dye solutions is determined colorimetrically, and of the leuco-bases nephelometrically. R. T.</p>																			
ASB-3.5.4 METALLURGICAL LITERATURE CLASSIFICATION																			
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Dyeing furs, feathers, etc. V. V. Kozlov and I. S. Zhuk. Russ. 30,104, December 31, 1939. The dyeing is effected with 1,3-, 1,7-, 1,8-, and(or) 2,3-dihydroxy-naphthalenes or their mixts.,  $p\text{-C}_6\text{H}_4(\text{NH}_2)_2$ ,  $p\text{-H}_2\text{NC}_6\text{H}_4\text{OH}$ ,  $1,4\text{-C}_6\text{H}_4(\text{NH}_2)_2$ , etc., in the presence of an oxidizing agent, e. g.,  $\text{H}_2\text{O}_2$ .

ASM-35A METALLURGICAL LITERATURE CLASSIFICATION

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110-120-130-140-150-160-170-180-190-200-210-220-230-240-250-260-270-280-290-300-310-320-330-340-350-360-370-380-390-400-410-420-430-440-450-460-470-480-490-500-510-520-530-540-550-560-570-580-590-600-610-620-630-640-650-660-670-680-690-700-710-720-730-740-750-760-770-780-790-800-810-820-830-840-850-860-870-880-890-900-910-920-930-940-950-960-970-980-990-1000

1ST AND 2ND ORDERS										PROCESSES AND PROPERTIES INDEX									
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<p>Dyeing furs, feathers, etc. V. V. Kostov and B. S. Zhuk. Russ. 86,100, Dec. 31, 1939. Black color is obtained by oxidation of a mixt. of 2,6- or 2,7-dihydroxynaphthalene and <math>\beta</math>-phenylenediamine, e. g., with <math>H_2O_2</math>.</p>																			
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<p>Light sensitive nitro compounds. VI. Some derivatives of nitronaphthalene with <math>\alpha</math>- and <math>\beta</math>-substituents containing sulfur. N. N. Vorozhtsov, V. V. Kuz'kov and I. S. Travkin. <i>J. Gen. Chem.</i> (U. S. S. R.) 9, 622-3 (1939); cf. C. A. 32, 4050. <math>\alpha</math>-Nitro-<math>\beta</math>-naphthylamine (I) is best prepd. by nitration of acet-<math>\beta</math>-naphthalide. When I undergoes the Gattermann reaction with <math>SCl_2</math> in the presence of <math>H_2SO_4</math>, it gives 1-nitronaphthalene-2-sulfonic acid (II), m. 119.5°. If HCl is used instead of <math>H_2SO_4</math> in this reaction, the product is 1-chloronaphthalene-2-sulfonic acid, m. 237.1°. II is moderately light-sensitive. Nitration of acet-<math>\alpha</math>-naphthalide gives a mixt. of the 2- and 4-nitro deriva. These are best sepd. by dissolving the mixt. in 0.5% KOH, dilg., adding the ppt. to dry <math>PhNO_2</math> and passing in a stream of dry HCl. Under these conditions, 1,4-nitronaphthylamine is obtained. By the Gattermann reaction this gives 1-nitronaphthalene-4-sulfonic acid, m. 132.6°, which is oxidized by <math>H_2O_2</math> to the corresponding sulfonic acid. Both these acids are weakly sensitive to light. 2-Nitronaphthalene-1-sulfonic acid is prepd. by the Sandmeyer reaction from 2-naphthylamine-1-sulfonic acid. It is a hygroscopic yellow powder whose Hg, Fe and Ag salts are insol. It is not sensitive to light.</p> <p>H. M. Leicester</p>			
<p>Lab. 7 Dyestuffs, Moscow Chem.-Tech. Inst. im. Mendeleev</p>			
<p>ASB. SL. NET. LURCK. LITERATURE CLASSIFICATION</p>			

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**Naphthalene series. VIII. Preparation of 4-nitro- $\alpha$ -naphthylamine and its transformation into an azo dye.**  
 N. N. Vorozhtsov and V. V. Kozlov, *J. Gen. Chem.* (U. S. S. R.) 9, 587 (1939); *Ch. C. A.* 31, 5700.  
 Oxidation of 4-nitroso- $\alpha$ -naphthylamine with acid  $\text{KMnO}_4$  at 50° gives 4-nitro- $\alpha$ -naphthylamine (II) in 100% yield. Needles from alc. or concd.  $\text{NH}_4\text{OH}$ . Diazotized with 10% excess resorcinol in alc. soln. gives a deep blue soln. from which a dye,  $\text{C}_{10}\text{H}_7\text{N}_3\text{O}_4$ , brown-black powder, is pptd. with acid. The dye, unsuitable as an indicator, gives a fuchsin-red soln. in concd.  $\text{H}_2\text{SO}_4$ . The sepn. of isomeric nitroamines by crystal from concd.  $\text{NH}_4\text{OH}$  is successfully applied to mixts. of 2- and 4-nitroamines and of 8- and 5-nitro- $\alpha$ -naphthylamines.  
 John Livak

ASM-514 METALLURGICAL LITERATURE CLASSIFICATION



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Chemistry of naphthalene derivatives. 1. Reaction of naphthalenesulfonic acids with alkali chlorates. V. V. Kodov and D. G. Talybov. *J. Gen. Chem.* (U. S. S. R.) 9, 1827-33 (1930).—The reaction of 1- $\text{C}_{10}\text{H}_7\text{SO}_3\text{Na}$  in dil.  $\text{HCl}$  with  $\text{KClO}_3$  at the boiling temp. gave chiefly 1,6- $\text{C}_{10}\text{H}_6\text{Cl}_2$  and some 1,5-, 1,8- and 1,7-isomers. 2- $\text{C}_{10}\text{H}_7\text{SO}_3\text{Na}$  under these conditions gave about 30% 2,6- $\text{C}_{10}\text{H}_6\text{Cl}_2$ . The reactions are accompanied by partial oxidation of the di-Cl compds. to 6-chloro-1,4-naphthoquinone, m. 106-7°. The formation of di-Cl derivs. does not take place at lower temps. (80-90°). Chas. Blanc

Lab. Organic Intermediate Products + Dyes, Moscow Chem-Tech. Inst  
v. m. Mendelkhan

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<div style="float: right; font-size: 2em; margin-right: 20px;">26</div> <div style="float: left; font-size: 1.5em; margin-left: 20px;">CA</div> <p>Oil capacity of organic pigments and colored varnishes  V. V. Kozlov and A. V. Simanovskaya. <i>Polygraf. Promysl.</i>  1939, No. 10, 39-42; <i>Khim. Referat. Zhur.</i> 1940,  No. 6, 119; cf. C. A. 34, 3518V. — Comparative data are  presented on the oil capacity of some org. pigments and  colored varnishes used in the polygraphic industry. For  dett. of oil capacity the method of Fasig is preferred to  those of Gardner-Colman and of the Sci. Research Inst. of  Varnishes and Pigments; it is more rapid, accurate and  convenient, and gives reproducible results.</p> <p style="text-align: right;">W. R. Henn</p>																																																			
<div style="float: left; width: 50%;"> <p>ASD-51A DETAILURGICAL LITERATURE CLASSIFICATION</p> <p>GROUP 1A</p> <p>1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52</p> </div> <div style="float: right; width: 50%;"> <p>GROUP 2A</p> <p>1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52</p> </div>																																																			

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<p>Naphthalene derivatives as oxidation dyes for furs.  V. V. Kuslov and D. S. Zhuk. <i>J. Applied Chem.</i> (U. S. S. R.) 12, 1501-12 (in French, 1513) (1939).—The ability of the dihydroxynaphthalenes to dye furs decreases in the order 1,2-, 1,4-, 1,6-, 1,7-, 1,3-, 2,6-, 2,7-, 1,6-, 1,8-. The procedure is described in detail. 1,2-, 1,4-, 1,6- and 1,8-Naphthylenediamines and 1,2- and 1,4-aminonaphthols also were studied. Richer colors are obtained with these diamines than with those of the benzene series. Combinations of these dyes in fur dyeing are also discussed. Dihydroxynaphthalenes can be combined with other oxidation dyes of the naphthalene series as well as of the benzene series. The fastness of the dye on the furs is not inferior, and in some instances it is superior, to that obtained from benzene derivs. 22 references. A. A. B.</p>																			
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<p><b>Diazo compounds. II. The interaction of diazo compounds with complex heteropoly acids.</b> V. V. Kozlov and B. N. Arkhipov. <i>J. Gen. Chem.</i> (U. S. S. R.) 10, 685-90 (1940); cf. <i>C. A.</i> 31, 8517<sup>8</sup>.—Previously it was shown (Russ. pat. 51,808; <i>C. A.</i> 33, 9324<sup>8</sup>) that aromatic diazonium salts react with heteropoly acids and their salts free from F to form water-insol. complex diazo compds. Addnl. data show that the scheme of the quant. reaction with phosphotungstic acid (I) (and with phosphomolybdic acid) is: <math>3 \text{ ArN}_2\text{X} + \text{I} \cdot \text{H}_2\text{O} = [\text{ArN}_2]_3\text{H}_4\text{P}(\text{Mo}_3\text{O}_{12})_6 + 3 \text{ HX}</math>. Silicotungstic acid reacts with 4 mols. <math>\text{ArN}_2\text{X}</math>. The complex diazo compds., derived from isomeric nitroanilines, toluidines and anisidines, are insol. in common org. solvents and are sol. in cold acetin, dil. glycerol and 10% NaOH and in hot <math>\text{C}_2\text{H}_5\text{N}</math> and <math>\text{Me}_2\text{CO}</math>. They show greater stability than the common diazo compds. to the action of elevated temps. (80-90°), prolonged storage (over 1 year) and shock by blow. They burn in a free flame without a flash. These preps. (freshly prepd. or dried) react in an aq. suspension with azo components to give dyes of the same color and tinctorial strength as the corresponding simple diazonium salts. Cu and its salts catalyze the decompn. of the complex diazo compds. with</p>					
<p>the cleavage of the heteropoly acid and the formation of corresponding phenols. Thus, the derivs. of <math>\text{o-O}_2\text{NC}_6\text{H}_4\text{NH}_2</math> and <math>\text{o-anisidine}</math> gave, resp., 40% <math>\text{o-O}_2\text{NC}_6\text{H}_4\text{OH}</math> and 70% guaiacol. III. Complex diazo compounds of phenylenediamines with heteropoly acids and certain dyes derived from them. V. V. Kozlov, B. N. Arkhipov and A. V. Simanovskaya. <i>Ibid.</i> 697-704.—The isomeric <math>\text{C}_6\text{H}_4(\text{NH}_2)_2</math> react in HCl soln. with heteropoly acids to give sparingly sol. complex salts of the type: <math>[\text{C}_6\text{H}_4(\text{NH}_2)_2]_3\text{H}_4\text{P}(\text{Mo}_3\text{O}_{12})_6</math>, <math>[\text{C}_6\text{H}_4(\text{NH}_2)_2]_3\text{H}_4\text{P}(\text{W}_3\text{O}_{12})_6</math>, and <math>[\text{C}_6\text{H}_4(\text{NH}_2)_2]_3\text{H}_4\text{Si}(\text{W}_3\text{O}_{12})_6</math>. The complex salts, derived from <i>m</i>- and <i>p</i>-isomers, react with <math>\text{NaNO}_2</math> in HCl soln. to give 98-100% of monodiazocompds. of the type: <math>[\text{H}_2\text{NC}_6\text{H}_4\text{N}_2]_3\text{H}_4\text{P}(\text{Mo}_3\text{O}_{12})_6</math> and <math>[\text{H}_2\text{NC}_6\text{H}_4\text{N}_2]_3\text{H}_4\text{Si}(\text{W}_3\text{O}_{12})_6</math>. If <math>\text{NaNO}_2</math> is used in excess of 1 mol., the yellow or pale-rose monodiazocompds. become discolored by partial decompn. Analytical and expl. evidence showed that only 1 <math>\text{NH}_2</math> group in <math>\text{C}_6\text{H}_4(\text{NH}_2)_2</math> is diazotized. Thus, the decompn. of the diazo products with boiling dil. <math>\text{H}_2\text{SO}_4</math> and the treatment of the decompn. residue with 30% NaOH gave no resorcinol and hydroquinone, resp., but the corresponding <i>m</i>- and <i>p</i>-<math>\text{H}_2\text{NC}_6\text{H}_4\text{OH}</math>, identified as di-<i>Hz</i> derivs. In soly. and stability these monodiazocompds. are similar to the complex diazo compds. described in part II above. When coupled with 2-<math>\text{C}_6\text{H}_4\text{OH}</math>, they give up to 95% of brown azo dyes of good fastness. When treated with 5-10% NaOH, these dyes are decompd.: <math>\text{H}_4\text{P}(\text{Mo}_3\text{O}_{12})_6 \cdot [\text{H}_2\text{NC}_6\text{H}_4\text{N}_2\text{C}_6\text{H}_4\text{OH}]_3 + n\text{NaOH} = 3 \text{ H}_2\text{NC}_6\text{H}_4\text{N}_2\text{C}_6\text{H}_4\text{OH} + n\text{H}_2\text{O} + \text{Na}_3\text{PO}_4 + \text{Na}_3\text{MoO}_4</math> (cf. <i>C. A.</i> 31, 6009<sup>8</sup>). <math>\text{o-C}_6\text{H}_4(\text{NH}_2)_2</math> reacts also with heteropoly acids, but the resulting cryst. complex salts form with <math>\text{HNO}_3</math> some complex compds. incapable of coupling reaction with azo components, and probably are azimides of the type <math>[\text{C}_6\text{H}_4\text{N}_2]_3\text{H}_4\text{P}(\text{Mo}_3\text{O}_{12})_6</math>. 1,8-<math>\text{C}_6\text{H}_4(\text{NH}_2)_2</math> gives analogous reactions. C. B.</p>					
<p>ASH-31A METALLURGICAL LITERATURE CLASSIFICATION</p>					
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COMMON ELEMENTS		PROCEDURES AND PROPERTIES INDEX		SUB AND ATOM SYMBOLS																																																																																																					
ca		<p>Naphthalene series. IX. Transformation of a salt of 1-naphthylamine-4-sulfonic acid into a salt of 1-naphthylamine-2-sulfonic acid. N. N. Vorozhtsov, V. V. Kozlov, B. V. Aristov, A. I. Baryshev and M. F. Fedulov. J. Gen. Chem. (U. S. S. R.) 10, 804-806 (1940); cf. C. A. 33, 7773'. The transformation of the Na salt (I) of 1,4-<math>\text{H}_2\text{NC}_6\text{H}_4\text{SO}_3\text{H}</math> (II) into the Na salt (III) of 1,2-<math>\text{H}_2\text{NC}_6\text{H}_4\text{SO}_3\text{H}</math> (IV) on heating with sand or <math>\text{C}_{10}\text{H}_8</math> in the presence of air proceeds via the Na salt (V) of 1-naphthylsulfamic acid (VI), since small amts. of 1-naphthylamine from VI can be detected in the reaction mixt. and V yields III on heating and not I, as erroneously stated by Berkenheim and Filimonov (C. A. 33, 1305') for the corresponding <math>\text{NH}_4</math> salt. The K, Mg and Ba salts of II react in an analogous manner as I, and the K and <math>\text{NH}_4</math> salts of VI react like V. II is not rearranged on heating. The yield of III is particularly high (73.77%) when I is boiled with quinoline.</p> <p style="text-align: right;">Gertrude Berend</p>		10																																																																																																					
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<table border="1"> <tr> <td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td><td>10</td><td>11</td><td>12</td><td>13</td><td>14</td><td>15</td><td>16</td><td>17</td><td>18</td><td>19</td><td>20</td><td>21</td><td>22</td><td>23</td><td>24</td><td>25</td><td>26</td><td>27</td><td>28</td><td>29</td><td>30</td><td>31</td><td>32</td><td>33</td><td>34</td><td>35</td><td>36</td><td>37</td><td>38</td><td>39</td><td>40</td><td>41</td><td>42</td><td>43</td><td>44</td><td>45</td><td>46</td><td>47</td><td>48</td><td>49</td><td>50</td><td>51</td><td>52</td><td>53</td><td>54</td><td>55</td><td>56</td><td>57</td><td>58</td><td>59</td><td>60</td><td>61</td><td>62</td><td>63</td><td>64</td><td>65</td><td>66</td><td>67</td><td>68</td><td>69</td><td>70</td><td>71</td><td>72</td><td>73</td><td>74</td><td>75</td><td>76</td><td>77</td><td>78</td><td>79</td><td>80</td><td>81</td><td>82</td><td>83</td><td>84</td><td>85</td><td>86</td><td>87</td><td>88</td><td>89</td><td>90</td><td>91</td><td>92</td><td>93</td><td>94</td><td>95</td><td>96</td><td>97</td><td>98</td><td>99</td><td>100</td> </tr> </table>						1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
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1ST AND 2ND ORDERS																										3RD AND 4TH ORDERS																									
PROCESSES AND PROPERTIES INDEX																																																			
<p><i>C-4</i></p> <p>The thianthrene series. I. Thianthrene-3 sulfonic acid disulfone. V. V. Kozlov, E. P. Fruktova and O. M. Shemyakina. <i>J. Gen. Chem.</i> (U. S. S. R.) 10, 1077-88 (1940). — <math>\text{S}_2\text{Cl}_2</math>, <math>\text{C}_6\text{H}_6</math> and <math>\text{AlCl}_3</math> give 78.5% thianthrene which is oxidized by <math>\text{CrO}_3</math> in glacial <math>\text{HOAc}</math> to give 92% thianthrene disulfone (I), m. 321°. This is very inert toward sulfonating agents, and only when heated for 2 hrs. at 140° with a large excess of 62% oleum in a sealed tube does it give 58% of a monosulfonic acid, isolated as the K salt (II). No other compds. can be obtained. The <math>\text{NH}_4</math>, <math>\text{Mg}</math>, <math>\text{Na}</math>, <math>\text{K}</math>, <math>\text{Cu}</math>, <math>\text{Ba}</math>, <math>\text{Zn}</math>, <math>\text{Al}</math>, <math>\text{Fe}</math>, <math>\text{Pb}</math> and <math>\text{Ag}</math> salts are described. When II is refluxed for 5 hrs. with <math>\text{PCl}_5</math> at 100° in the presence of a little <math>\text{POCl}_3</math>, it gives 72% of the sulfonyl chloride (III), decmp. 194°. When III is heated with <math>\text{H}_2\text{O}</math> in a sealed tube, it gives a very hygroscopic acid. III and <math>\text{NH}_3</math> give the corresponding acid amide, m. 178°. When II is ground with <math>\text{PCl}_5</math> and some <math>\text{POCl}_3</math> and heated for 5 hrs. at 180°, it gives 78% of a chlorothianthrene disulfone, m. 120°, which is identical with the compd. prepd. by oxidizing <math>\beta</math>-chlorothianthrene with <math>\text{CrO}_3</math> in <math>\text{HOAc}</math>. Fusion of II with <math>\text{NaOH}</math> gives <math>\text{PhOH}</math>, resorcinol and <math>p\text{-HOCH}_2\text{SO}_3\text{H}</math>. These facts prove that sulfonation of I occurs in the <math>\beta</math>-position. H. M. L.</p>																																																			
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<p>Diazo compounds. IV. The influence of polyhydric alcohols and some saccharides on the diazotization of <i>m</i>-phenylenediamine. V. V. Kozlov and B. I. Stepanov. <i>J. Gen. Chem.</i> (U. S. S. R.) 10, 1810-23 (1940); cf. preceding abstr.—The influence of addn. of glycerol, mannitol, (C<sub>12</sub>H<sub>22</sub>O<sub>11</sub>), saccharose, glucose, maltose, lactose and raffinose on the diazotization of <i>m</i>-C<sub>6</sub>H<sub>4</sub>(NH<sub>2</sub>)<sub>2</sub> (I) was investigated. The yield of bisdiazo compd. formed was found to increase with the increasing mol. of HO groups in the mol. of the added substance. It also increased with the concn. of the added substance in soln. It was also found that the addition of glycerol increased the speed of the azo-coupling reaction. Six curves, 18 tables and 17 references are given. James J. Lichten</p>																			
ASAC-SLA METALLURGICAL LITERATURE CLASSIFICATION																			



KOZLOV, V. V.; ARKHIPOV, B. N.; SIMANOVSKAYA, A. V.

"Investigations in the Field of Diazo Compound--III. On the Complex Diazo Compounds of Phenylene Diamenes With Heteropoly Acids and some Pigments From Them". Zhur. Obshch.Khim. 10 No. 8, 1940. Lab. of Dyestuffs, Moscow Chemico-Technol. Inst. imeni Mendeleyev. Received 13 Oct. 1939.

Report U-1627, 11 Jan. 52

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PROCESSES AND PROPERTIES INDEX																			
<p>10</p> <p>The synthesis and new applications of dihydroxynaphthalenes. V. V. Kuznetsov and D. S. Zhuk. <i>Trudy Makhov. Khim.-Tehn. Inst. Mendeleev</i> 1940, No. 7, 3-48; <i>Khim. Refert. Zhur.</i> 4, No. 9, 123(1941). A no. of hydroxynaphthalenes were obtained by basic fusion of hydroxy- or disulfonic acids. Fusing 1,3-naphtholsulfonic acid with KOH at 320-60° formed 1,3-dihydroxynaphthalene (yield 25-30%). Addition of hydrazine increased the yield to 47%. Some isomeric dihydroxynaphthalenes (1,6, 1,7, 2,3 and 1,2) yielded stable colors for lurs (especially black color) on applying certain mordants and in mixts. with other oxidizing dyes. The colors were considerably more stable than those of ordinary dyes of the benzene series. The 1,8-, 2,6-, and 2,7-isomers can intensify the color in a mixt. with other oxidizing dyes. Dihydroxynaphthalenes can be used for the synthesis of valuable brown varnishes used in polygraphy. W. R. Henn</p> <p>Chem. Ab., Vol. 38, March 10, 1944.</p>																			
ASB-514 METALLURGICAL LITERATURE CLASSIFICATION																			
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The naphthalene series. X. Synthesis of 1,3-dihydroxynaphthalene (naphthoresorcinol). V. V. Korlov and Yu. P. Odintsov. *J. Applied Chem. (U.S.S.R.)* 17, 210-27(1944)(English summary); cf. C.A. 38, 4373. It was shown that alk. fusion of 1,3-naphtholsulfonic acid leads to 0.3-2% 1,3-dihydroxynaphthalene, with addition of various reducing agents leading to somewhat lower yields of purer product. In this connection, KOH appears to lead predominantly to the di-OH compd., with 1.5 hrs. fusion at 230-410° giving the best results. The most satisfactory reducing agents tried were hydrosulfites and sulfites. Fusion of 1,3-C<sub>10</sub>H<sub>6</sub>(SO<sub>3</sub>H)<sub>2</sub> under the above conditions could be also held to formation of naphthoresorcinol. o-Toluic acid is the main by-product in the fusion. The final purified product m. 123.5-4°; mononitroso deriv., m. 182.5-3°, dinitroso deriv. m. 160-2°. With PhN<sub>2</sub>Cl the product yields an orange water-insol. dyestuff.

G. M. Kosolapoff

COMMON ELEMENTS		PROCESSING AND PROPERTIES INDEX	
<p><b>Ca</b></p> <p>Thianthrene series. II. 1,2-Dihydroxythianthrene disulfone. V. V. Kozlov and N. I. Stakhovskaya (Moscow Chem. Tech. Inst.). J. Gen. Chem. (U.S.S.R.) 16, 1115-20(1946) (in Russian); cf. C.I. 35, 402<sup>b</sup>. — Na 2-thianthrenesulfonate 5,10-disulfone (I) (1.27 g.), 8 g. NaOH, 0.65 g. NaNO<sub>2</sub>, and 20 cc. water were heated in an autoclave 5 hrs. to 190°, the mixt. acidified to Congo red with HCl, evapd. to dryness, and extd. with EtOH to give 0.5 g. 1,2-dihydroxythianthrene 5,10-disulfone, a deep-yellow mass, m. 197°; di-Na salt, yellow needles (from dil. EtOH); Ph salt, yellow grains (from EtOH); the K, Ca, Zn, Co, Ni, and Cu salts are readily sol. in water and EtOH, the Ag salt poorly sol. in water. The above expt. was repeated, using 2 g. Na salt and 2 g. CaO in 20 cc. water 3.5 hrs. at 180-190°, followed by acidification with HCl to Congo red; the soln. was then condensed with diazo-p-nitroaniline in Na<sub>2</sub>CO<sub>3</sub> soln. to yield a red-orange dye. The product of the CaO reaction may be partially extd. with Et<sub>2</sub>O, CHCl<sub>3</sub>, or xylene from the original reaction mixt., but, due to its great soly. in water, the mother liquors still give the above-mentioned dye. It was possible to isolate only 25-30% compound (II), m. 160° (dec.) (from EtOH), in a state of comparative purity; it gives a brown color with FeCl<sub>3</sub>, a black ppt. with NH<sub>4</sub>AgNO<sub>3</sub>, a white ppt. with CaCl<sub>2</sub>, and a yellow ppt. with Br water. II was acetylated only with difficulty on heating to 120° with Ac<sub>2</sub>O in the presence of a little H<sub>2</sub>SO<sub>4</sub>; Ac deriv. m. above 300° (from EtOH); treatment with Br in AcOH gave a dibromide, C<sub>10</sub>H<sub>4</sub>O<sub>2</sub>S<sub>2</sub>Br<sub>2</sub>, m. 150.5° (from AcOH or EtOH). The mono-OH compd. may also be obtained in 17% yield by conducting the autoclave reaction with 1.27 g. Na sulfonate, 2 g. NaOH, and 20 cc. water 5 hrs. at 180-80°, with isolation of the product by EtOH extrn. of the evapd., acidified reaction mixt.</p> <p>G. M. Kosolapoff</p>		<p>10</p>	
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The naphthalene series. XI. Rearrangement of the salts of 1-naphthol-4-sulfonic acid into the salts of 1-naphthol-2-sulfonic acid. V. V. Korlov and M. A. Shilberg (Moscow Chem. Tech. Inst. Mendeleeva). *J. Gen. Chem.* (U.S.S.R.) 16, 1291-1302 (1940) (in Russian); cf. *C.A.* 30, 2744. The rearrangement of salts of 1-naphthol-4-sulfonic acid into the salts of 1-naphthol-2-sulfonic acid was studied in respect to the effect of temp. and time; the results were completely analogous to those reported earlier (Vorokhtsov, *et al.*, *C.A.* 33, 4373) in connection with the formation of salts of 1-naphthylamine-2-sulfonic acid. The rearrangement apparently proceeds through the intermediate formation of a 1-naphthol sulfate ester; the reaction is completely inhibited by  $\text{CaCl}_2$ . The temp. range studied was 130-200°, with max. duration of 6 hrs. In a typical expt., 3.25 g. Na 1-naphthol-4-sulfonate and 20 g. sand were heated to 180° 3 hrs. to give 32.5% 1-naphthol-4- and 63.4% Na 1-naphthol-2-sulfonate. The sepn. of the products was effected through the K salts; salting out with KCl pptd. only the K 1-naphthol-2-sulfonate, the 4-isomer remaining in soln. G. M. K.

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PRECEDENCE AND PREPARATION INDEX

10

CA

1-Hydroxyanthraquinone. V. V. Kozlov and A. A. Egorova. U.S.S.R. 68,330. Apr. 30, 1917. 1-Anthraquinonesulfonic acid is acted upon by H<sub>2</sub>O or dil. H<sub>2</sub>SO<sub>4</sub> in an autoclave at 200-200°.

M. Hosh

CLASSIFICATION

KOZLOV, V. V.

PA 15T46

USSR/Chemistry - Anthraquinone  
Chemistry - Sulfonic acid

Feb 1947

"Investigation of the Anthraquinone Series: 1, The  
Study of 1,4-Anthraquinone Disulfonic Acid," V. V.  
Kozlov, 10 pp

"Zhur Obshch Khim" Vol XVII, No 2

Synthesis of the subject acid, and studies of its  
salts with metals and amines.

15T46

KOZLOV, V. V.

PA 15T47

USSR/Chemistry - Anthraquinone  
Chemistry - Sulfonic acid

Feb 1947

"Investigation of the Anthraquinone Series: 2,1-  
Chloro-4-Anthraquinone Sulfonic Acid," V. V. Kozlov,  
5 pp

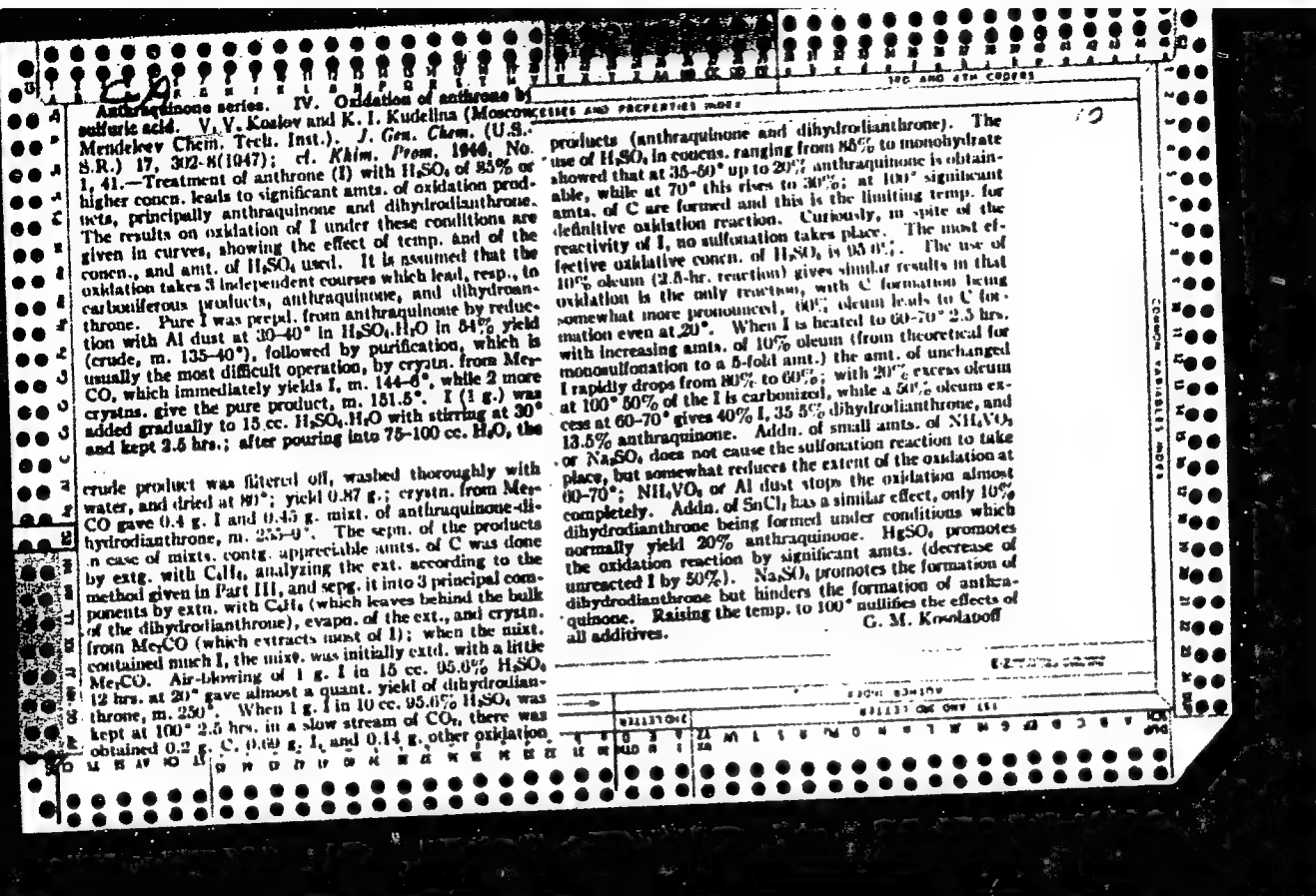
"Zhur Obshch Khim" Vol XVII, No 2

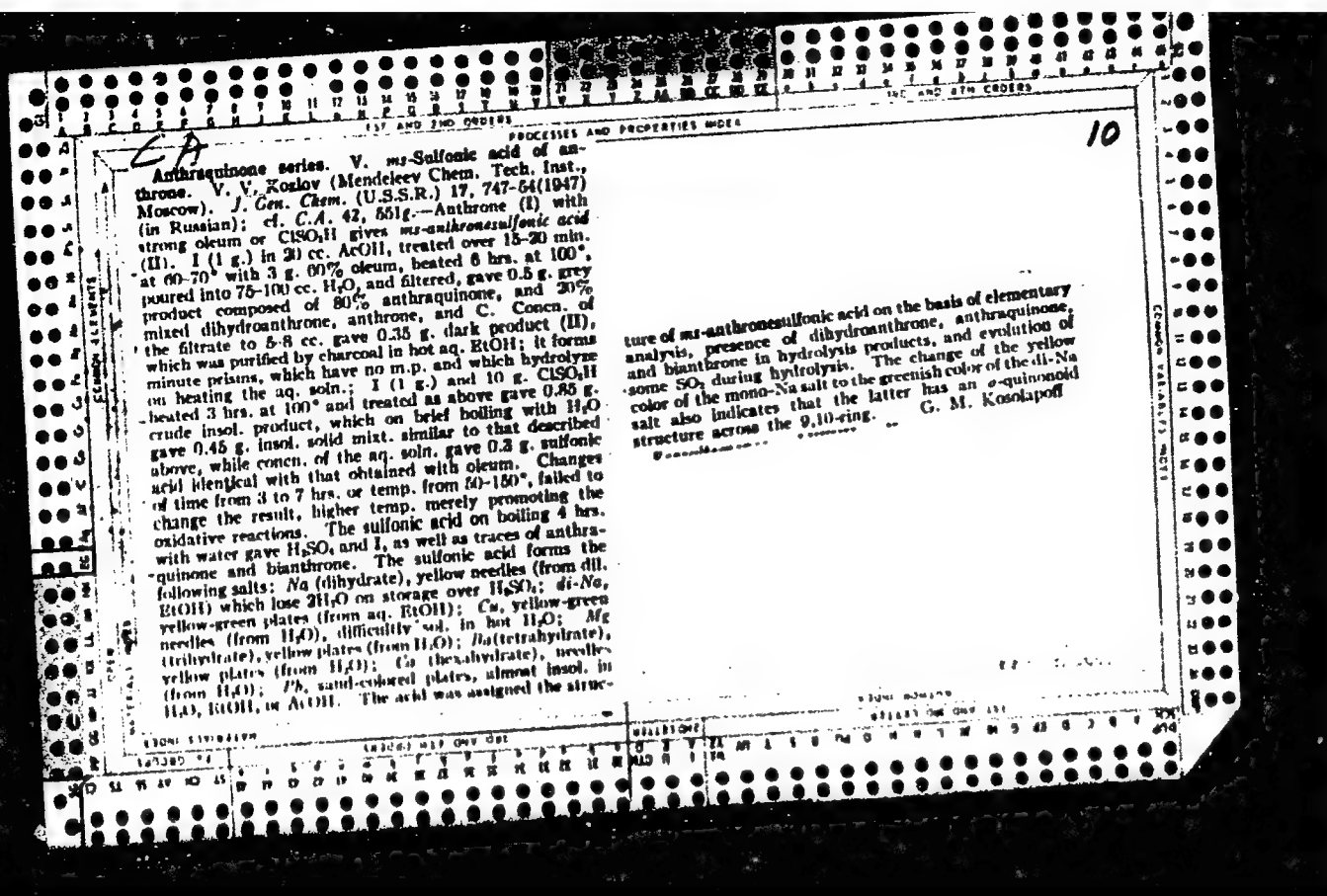
Subject acid obtained by action of chlorine on 1,4-  
anthraquinone disulfonic acid (see above) during  
its evolution.

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15T47







**GA**

**Anthraquinone series. VI. Action of chlorosulfonic acid on anthraquinone.** V. V. Kozlov (Moscow Chem. Technol. Inst.). *J. Applied Chem. (U.S.S.R.)* 20, 887-888 (1947) (in Russian); cf. C. I. 42, 135 (f).—The influence of excess  $\text{ClSO}_3\text{H}$ , time, and temp. on the reaction of  $\text{ClSO}_3\text{H}$  with anthraquinone (I) was investigated. The reaction proceeds in a complex manner and at 135° yields the following derivs. of I: 2-sulfo (II), 2-chlorosulfonyl (III), 2-chloro (IV), dichloro (V), hydroxy derivs. plus anthracene derivs., adducts of Cl and  $\text{HCl}$  to I, as well as unchanged I. The yield of III as the chief product (86.9%) can be obtained in 3 hrs. at 135° with 30 moles  $\text{ClSO}_3\text{H}$  or

with 18 moles  $\text{ClSO}_3\text{H}$  and 1 mole 60% oleum or alkali sulfate. Sulfonation in the presence of Hg does not lead to 1-sulfo derivs.; almost all the Hg sublimes in the form of  $\text{HgCl}_2$ . Sepn. of I and III is best done by ligroin, but any fractional crystn. of these substances is not very satisfactory; hence, in view of the rather low content of secondary products, the analysis of the mixts. was best done by sublimation of residual I (temp. is not given); III is estd. by difference. I (20.8 g.) was added over 0.5 hr. at room temp. to 11.7 g.  $\text{ClSO}_3\text{H}$ , after which the mixt. was heated 3 hrs. at 130-5°; after cooling and pouring on ice, the mixt. was rapidly boiled, filtered at 60°, and the filtrate and aq. washings were heated to the b.p. and treated with 50 ml. 20%  $\text{Na}_2\text{SO}_4$ ; the salted out Na salt of II (21%) is filtered off in 15 hrs. and recrystd. from  $\text{H}_2\text{O}$ ;

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conversion of this to the Cl deriv. gives IV, m. 294-6°, thus showing that the primary product is II. The ppt. obtained from the original reaction mixt. and II, usually m. 203-8° and on sublimation gives I (63.8°); crystn. from solvents (unspecified) permits isolation of 5% III, m. 180-91° (from ligroin); no other products were isolated. The use of excess  $\text{ClSO}_3\text{H}$  gave addnl. products, summarized as follows: (1) 6 moles  $\text{ClSO}_3\text{H}$ : 58% I, 8.5% Na salt of II, 20.2% III, 1.5% IV, 2.5% V, 1.5% hydroxy deriv. of I, 2.0% hydroxy derivs. of sulfoanthraquinones (VI), 3.5% anthracene derivs., and 0.15% adducts of Cl to I; (2) 12 moles  $\text{ClSO}_3\text{H}$ : 40.0, 2.5, 39.5, 2.5, 3.5, 2.8, 0.0, 5.5, and 0.2%, resp.; (3) 18 moles  $\text{ClSO}_3\text{H}$ : 11.5, 9.0, 54.5, 4.0, 7.5, 6.0, 1.5, 2.0, and 0.15%, resp.; (4) 30 moles  $\text{ClSO}_3\text{H}$ : —, —, 86.0%, trace, 7.0, 9.0, 2.5, 2.5, —. The V referred to represents the mixt. obtained on treatment of the mother liquor, after sepn. of II, with hypochlorite; it is apparently a mixt. of the 2,6- and 2,7-isomers. IV was estd. by Cl analysis of the thoroughly washed ppt. after ice treatment and by fractional crystn. of the sublimate from  $\text{AcOH}$ , as well as by adsorption of  $\text{Al}_2\text{O}_3$  from  $\text{PhMe}$  soln. The VI were detected by the color change of the mother liquor on neutralization by  $\text{Na}_2\text{CO}_3$ ; the mother liquor with hypochlorites at 80° gave a crude hydroxy chloro deriv., m. 250-80°, while crystn. from  $\text{AcOH}$  gave  $\text{C}_{14}\text{H}_9\text{O}_2(\text{OH})$ , m. 294°; although the structure of these compds. was not established, the color change to red on neutralization indicates a 2-OH deriv. Crude III on heating in an autoclave with lime gave 85% 2-hydroxyanthraquinone. G. M. Konolapoff

ABR-514 METALLURGICAL LITERATURE CLASSIFICATION

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The sulfonation of 2,2'-dinaphthyl sulfone. V. V. Kozlov and G. S. Tulyanskaya (Mendeleev Inst., Moscow). *Dokl. Akad. Nauk S.S.S.R.* 98, 281 (1947); *Chem. Zentr.* 1948, II, 245 f. The products of the action of  $H_2SO_4$  on  $(2-C_{10}H_7)_2SO_2$  are extremely difficult to sulfonate under normal conditions. The acid must be concentrated and used in large excess. The min. concn. required to produce slow sulfonation at  $100^\circ$  when used in an excess equal to 30 times the theoretical amt. was 87.5%. A like excess of 96% acid sulfonated the sulfone at  $15-20^\circ$  within an hour. A 30% excess of the monohydrate (caked, on monosulfonation) did not produce sulfonation in 5 hrs. even at  $165^\circ$ . No better results were obtained by treating the sulfone in HOAc with 20-60% oleum 6 hrs. at  $55^\circ$ . The addn. of 10%  $Na_2SO_4$  (scaled, on the sulfone) accelerated the reaction somewhat. Because of the equivalence of the 2 naphthalene nuclei, the formation of the monosulfonic acid in addn. to the disubstituted product is very slight. Reaction products reported are:  $(2,2'-HO_2SC_{10}H_7)_2SO_2$  (I);  $(2,2'-HO_2SC_{10}H_7)_2SO_2$  (II), and  $2,2'-(2-C_{10}H_7SO_2)_2C_{10}H_7SO_2$  (III). Lower temps.

favored the formation of I and III; at about  $100^\circ$  the formation of III was already slight, while at  $165^\circ$  the principal product was II. The di compds. were not brominated by bromide-bromate, while the mono compd. took up 2 Br atoms. All 3 sulfonic acids showed weak surface activity (emulsifying power). Alkali fusions of the disulfonic acids yielded di-HO derivs. which could be used as new *de*-components. Exptl.: 3-6 g.  $(2-C_{10}H_7)_2SO_2$ , m.  $174^\circ$ , heated with 30 times the theoretical amt. of concd.  $H_2SO_4$ , the product poured into 100-200 cc. water, filtered off, the unchanged sulfone washed out, the mother liquor and wash water neutralized with  $Na_2CO_3$ , and the filtrate from the ppt. of concd. The Ba salt of III sepd. out first, then the Ba salt of I. The filtrate was evapd. to dryness and exhd. with 80% alc. The residue was almost pure I; II was obtained from the alc. ext. Derivs. of I: the Ba salt with  $H_2SO_4$  yielded free I, as a hygroscopic mass, m.  $64^\circ$ . The Ba salt with  $PCl_5$  3 hrs. at  $100^\circ$  yielded the dichloride,  $C_{10}H_7SO_2Cl_2$ , needles (from  $C_6H_6$ , xylene, and HOAc), m.  $222^\circ$ , 30% by hydrolyzed in 6 hrs. by heating with water at  $100^\circ$ , completely hydrolyzed by aq. HOAc and aq. alc., formed esters with anhyd. alcs. Disulfonamide, platelets from  $PhNH_2$ -MeOH, m.  $290^\circ$ ; disulfonamide, platelets from  $PhNH_2$ -

over

<sup>1</sup>  $C_{11}H_7$ , m. 278°. The Ba salt,  $C_{11}H_7O_8S_2Ba \cdot 4H_2O$  crystal. from water as octahedrons,  $C_{11}H_7O_8S_2Ba \cdot 9H_2O$  from aq. alc. as rhombic octahedrons,  $C_{11}H_7O_8S_2Ba \cdot 7H_2O$  from aq. alc. as platelets; Pb salt,  $C_{11}H_7O_8S_2Pb$ , platelets from aq.  $HCl$ ; insol. in water and  $HCl$ ; Cu salt, greenish needles,  $HCl$ , insol. in water; Fe salt,  $C_{11}H_7O_8S_2Fe$ , plate. Cu salt, thin needles; Ni salt,  $C_{11}H_7O_8S_2Ni$ , plate. Zn salt,  $C_{11}H_7O_8S_2Zn$ , granular, insol. in water; aniline salt,  $C_{11}H_7O_8S_2C_6H_5$ , needles from water, m. 173°;  $SO_2(SO_2NH_2)Ph \cdot 4H_2O$ , needles from water, m. 173°; benzidine salt,  $C_{11}H_7O_8S_2(SO_2NH_2)_2$ , needles from alc., m. 201°. Derivs. of II: Dichloride, microcrystals from glacial  $HCl$ , m. 135°, very sol. in org. solvents, and 85% hydrolyzed by heating with water 6 hrs. at 100°, and otherwise analogous to the dichloride of I; disulfonamide, fine crystals from  $MeOH$ , m. 198°, insol. in ether,  $C_6H_5$ , xylene, and  $ClCH_2Cl$ ; solvents; disulfonamide, needles from  $MeOH$ ,  $C_6H_5$ ;  $C_{11}H_7O_8S_2(SO_2Na)_2 \cdot 4H_2O$ , hygroscopic needles from alc.;  $C_{11}H_7O_8S_2(SO_2Na)_2$ , needles from alc.; benzidine salt, obtained as an oily residue. The salts of other metals and of many amines were very sol. in water.  $PCl_5$  with the Ba salt of III gave the sulfonyl chloride, needles from  $C_6H_5$ , m. 190-7° and from this the 2-chloronaphthalene, m. 61°, and 1,6-dichloronaphthalene, m. 80°. M. G. Moore

1ST AND 2ND ORDERS		PROCESSED AND PROPERTIES INDEX	
<p>Anthraquinone series. VII. Suppression of the catalytic effect of mercury in the sulfonation of anthraquinone. V. V. Kozlov. <i>Zhur. Obshchei Khim.</i> (J. Gen. Chem.) 18, 242-50 (1948) (in Russian); cf. C.A. 42, 7284A, and following abstr.—In view of the elucidation of the nature of the well-known anticatalytic effect of NaCl, counteracting the <math>\alpha</math>-sulfonating effect of Hg and thus permitting sulfonation of anthraquinone (I) to <math>\beta</math>-sulfonic acids even in the presence of Hg, the behavior of different Hg compds. in sulfonation, and their soly. in oleum, were investigated. In the monosulfonation of I in the presence of considerable amts. of Hg, HgO, or HgSO<sub>4</sub>, the max. amt. of Hg (calcd. as HgO) bound by the unreacted I is up to 10% of its wt., 17% in the case of HgSO<sub>4</sub>. With Hg, HgO, or HgSO<sub>4</sub>, traces of Hg begin to appear in the sulfonated product when the amt. of the Hg (as HgO) is about 4% (relative to the wt. of I). HgCl<sub>2</sub>, 1-2%, also directs the sulfonation to the <math>\alpha</math>-deriv.; however, with up to 5% HgCl<sub>2</sub>, the unreacted I binds only up to 0.78% of its wt. of HgO; a considerable amt. of the HgCl<sub>2</sub> sublimes and condenses on the walls. At 135°, the soly. of HgCl<sub>2</sub> in 3.5% oleum is very slight and no Cl<sup>-</sup> ions are detectable; in 23.5% oleum, one detects equiv. amts. of Hg<sup>++</sup> and of Cl<sup>-</sup>, but, on cooling, HgSO<sub>4</sub> crystallizes instead of HgCl<sub>2</sub>. Consequently, in oleum, HgCl<sub>2</sub> is decompd. into HgSO<sub>4</sub> + 2HCl; in strong oleum, no HCl is evolved on soln. of HgCl<sub>2</sub>, hence the reaction is HgCl<sub>2</sub> + HgSO<sub>4</sub> + SO<sub>3</sub> → HgSO<sub>4</sub> + 2 SO<sub>3</sub>HCl. The extent of the reverse reaction is insufficient to ensure adequate removal of Hg by sublimation of HgCl<sub>2</sub>. Thus, addn. of HgCl<sub>2</sub>, inasmuch as it is converted into HgSO<sub>4</sub>, has the same <math>\alpha</math>-sulfonating catalytic effect as other Hg compds. This effect is effectively counteracted not only by NaCl but also by other anticatalysts. Thus, in the sulfonation of 238 g. I in 160 g. 40% oleum, with 2 g. HgO, 3.5 hrs. at 135°, the amts. of <math>\beta</math>- and of <math>\alpha</math>-sulfonic acids were: with 0.5% NaCl, 45 and 55%; with 1% NaCl, 100 and 0%; with 1% MgCl<sub>2</sub>, 100 and 0%; with 1% CaCl<sub>2</sub>, 91 and 9%; with 2% PCl<sub>3</sub>, 90 and 10%; with 2% PCl<sub>5</sub>, 91 and 9%; with 1, 2, and 5% NaBr, 0 and 100, 15.5 and 84.5, 85.6 and 14.4%; KCN has a weak anticatalytic effect, thus, with 3 and 6% KCN, 46 and 54, 52.2 and 47.8%. Na<sub>2</sub>SO<sub>4</sub>, NaI, and NaF have no anticatalytic effect at all. The following facts are quoted as evidence that the anticatalytic effect consists in supplying HCl for the reaction SO<sub>3</sub> + HCl → SO<sub>3</sub>HCl, which converts the bulk of the Hg or Hg compd. into nonionized HgCl<sub>2</sub>, thus ensuring the removal of Hg from the reaction mixt. through sublimation. Preliminary boiling of I, prior to sulfonation, with HCl en-</p>		<p>10</p>	
<p>ASH-SLA METALLURGICAL LITERATURE CLASSIFICATION</p>			
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<p>SEP 1948</p>			

sures sulfonation to  $\beta$ ; while with equiv. amts. of  $\text{HgSO}_4$  and  $\text{NaCl}$  in concd.  $\text{H}_2\text{SO}_4$ , preliminarily heated to 100-110°, the product is  $\alpha$ ; with a mixt. of  $\text{HgCl}_2$  or  $\text{HgSO}_4$  with 2 equivs. of  $\text{NaCl}$  in 28% oleum, heated as before,  $\beta$ -sulfonic acid is obtained;  $\text{HgCl}_2$  alone in 28% oleum, preliminarily heated, gives  $\alpha$ , but with an addn. of 1%  $\text{SO}_2\text{HCl}$  it gives only  $\beta$ . Sublimation of  $\text{HgCl}_2$  begins only after a time lag of about 30 min., ascribed to formation of the complex  $\text{SO}_2\text{HCl} \cdot \text{HgCl}_2$ . The mechanism of the anticatalytic effect of  $\text{NaCl}$  can thus be summarized in the scheme:  $3 \text{NaCl} + 3 \text{H}_2\text{SO}_4 \rightarrow 3 \text{NaHSO}_4 + 3 \text{HCl}$ ;  $3 \text{HCl} + 3 \text{SO}_2 \rightarrow 3 \text{SO}_2\text{HCl}$ ;  $\text{HgSO}_4 + 2 \text{SO}_2\text{HCl} \rightarrow \text{HgCl}_2 + \text{H}_2\text{SO}_4 + 2 \text{SO}_2$ ;  $\text{HgCl}_2 + \text{SO}_2\text{HCl} \rightarrow \text{HgCl}_2 \cdot \text{SO}_2\text{HCl}$ ;  $\text{HgCl}_2 \cdot \text{SO}_2\text{HCl} \rightarrow \text{SO}_2\text{HCl} + \text{HgCl}_2$  (sublimes); the global reaction is  $3 \text{NaCl} + 2 \text{H}_2\text{SO}_4 + \text{SO}_2 + \text{HgSO}_4 \rightarrow 3 \text{NaHSO}_4 + \text{HgCl}_2 + \text{SO}_2\text{HCl}$ . The effect of  $\text{KCN}$  is explained in a similar way, by formation of the equally nonionized but less stable  $\text{Hg}(\text{CN})_2$ .

N. Thon

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**Hydrolysis of anthraquinonemonosulfonic acids** V. A. Kozlov and A. A. Igorova (Chem.-tech. Mendeleev Inst., Moscow). *Doklady Akad. Nauk S.S.S.R.* 57, 407-70(1947); *Chem. Zentr.* (Russian Zone Ed.) 1948, II, 407-1; cf. C.I. 43,340g. - Contrary to data in the literature, 1-anthraquinonesulfonic acid (I) can be hydrolyzed to anthraquinone (II) by  $\text{H}_2\text{SO}_4$  even in the absence of Hg salts. The acid or its Na salt heated with 85%  $\text{H}_2\text{SO}_4$  under pressure at 180-200° for 6 hrs. yielded 64-80% II. Hydrolysis of the 2-acid under pressure is likewise possible in principle. However, heating this acid with water at 300° for 6 hrs. gave only 8% II. When the acid was heated to high temp. with concd.  $\text{H}_2\text{SO}_4$ , side reactions occurred. Hg salts made the hydrolysis of the 1-acid proceed smoothly but were of no value with the 2-acid. I could be hydrolyzed with 85%  $\text{H}_2\text{SO}_4$  at 180-200° even in an open vessel or with dil. acid (5%) under pressure at 200°; yield of II, 90%. The reaction is very much accelerated by the presence of Hg, with a Hg-org. compd. being formed. I heated with water at 180-200° formed 1-hydroxyanthraquinone (III), in 100%; the reaction liquid contained  $\text{H}_2\text{SO}_4$ . When dil.  $\text{H}_2\text{SO}_4$  (0.25%) or even 0.01% was used, the yield of III decreased in favor of the compd. with no (OH) group. Even when the salt of the acid (Na, K, NH<sub>4</sub>, or Ca) were used, the yield of III was poor. It could be increased by using 0.2%  $\text{H}_2\text{SO}_4$  with the Na salt of I and heating at 250-300° for 12-18 hrs. Heating I with water in the presence of a Hg salt reduced the yield of III; when  $\text{H}_2\text{SO}_4$  (5-85%) was used only II was obtained. When 1,2-anthraquinonesulfonic acid was heated with  $\text{H}_2\text{SO}_4$  in the presence of Hg salts only the 1-sulfonic acid group was attacked so that the 2-acid was formed. M. G. Moore



PA 8/49T51

KOZLOV, V. V.

USSR/Chemistry - Anthraquinone  
Chemistry - Anthrone, Mercurization of

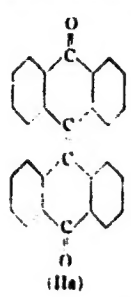
Apr 48

"Studies in the Field of the Anthraquinone Series,"  
V. V. Kozlov, Lab of Dyes, Moscow Chemicootech Inst  
imeni D. I. Mendeleev, 10 pp

"Zhur Obshch Khim" Vol XVIII (LXXX), No 4

Describes mercurization of anthrone using mercury  
acetate and sulfate. Products are dihydrodian-  
throne, anthraquinone, bianthrone, and mercury  
organic compounds. Submitted 13 Feb 1947.

8/49T51

COMMON ELEMENTS		PROCESS AND PROPERTIES INDEX	
<p><b>Anthraquinone series. VIII. Mercuration of anthraquinone.</b> V. V. Kozlov. <i>Zhur. Obshch. Khim.</i> (J. Gen. Chem.) 18, 767-00(1948); cf. C.A. 42, 1254f, and preceding abstr.—Anthrone (0.58 g.) and 0.65 g. yellow HgO in 30 ml. AcOH were refluxed 6 hrs. and filtered hot, yielding 0.37 g. of a black solid, which on treatment with 30% HNO<sub>3</sub> 15 hrs. at room temp. was freed of metallic Hg and gave 0.2 g. (0.4%) yellow amorphous C<sub>14</sub>H<sub>8</sub>O<sub>2</sub> (I), probably bis(9,10-dihydro-10-oxa-9-anthryl)-mercury. The major product isolated by cooling the soln. was 10,10'-bianthrone (II), m. 256° (from AcOH, then C<sub>6</sub>H<sub>6</sub>) (0.47 g.), and small amts. of unreacted anthrone. As the reaction time is increased to 12 hrs. the amt. of the latter drops to 14.4%, the "black product" increases to 0.36 g., and II increases to 0.42 g. I, triturated with a little alizarin oil and boiled with stirring with concd. HCl 3 hrs., gave HgCl<sub>2</sub> and II; 1 (0.2 g.) in 5 ml. 8% oleum treated with Cl for 45 min. at 15°, then poured into ice water, gave 0.1 g. 10,10'-dichloroanthrone, m. 131.5° (from dil. EtOH). Heating 10 g. anthrone, 10 g. HgO, and 250 ml. AcOH gave 0.26 g. I and 7.1 g. yellow product, m. 210-15°, which after extrn. with Me<sub>2</sub>CO and crystn. from AcOH gave 0.15 g. residue, does not m. up to 300° and on reduction by Zn-AcOH gave 10,10'-bi-9-anthrol, m. 229.5°, indicating that the original product was IIa. When 5 g. anthrone, 5 g. Hg(OAc)<sub>2</sub>, and 250 ml. AcOH were refluxed the following products were isolated:</p>		<p>10</p>  <p>(IIa)</p>	
<p>ASB-514 METALLURGICAL LITERATURE CLASSIFICATION</p>		<p>1 hr., 3.75 g. II, 1.1 g. anthraquinone, 0.15 g. IIa, and 0.075 g. I; 4 hrs., 4.8, trace, 0.07, 0.08, resp.; addn. of some Al dust in the last expt. gave 0.6, ..., 0.1, resp., as well as 4.4 g. recovered anthrone. In expts. lasting 11-12 hrs. small amts. of phthalic anhydride and phthalide were also isolated. Anthrone (0.5 g.) in 10 ml. H<sub>2</sub>SO<sub>4</sub> + H<sub>2</sub>O treated with 0.5 g. Hg sulfate in 10 ml. H<sub>2</sub>SO<sub>4</sub> + H<sub>2</sub>O, heated 2 hrs. at 80-60°, then poured into water, gave 0.01 g. solid, which after extrn. with CHCl<sub>3</sub> gave 0.15 g. black residue, C<sub>14</sub>H<sub>8</sub>O<sub>2</sub> (III), which is insol. in the usual solvents and does not melt; it is probably bis-anthronylmercury II sulfate; the CHCl<sub>3</sub> ext. gave 0.31 g. II, m. 255-7°, 0.07 g. mixt. of anthraquinone with II, m. 252-6°, and 0.08 g. anthraquinone-anthrone mixt., m. 170-4°. Use of a higher temp. (70-80°) increases the</p>	

difficulty of isolation of III because of C formation. III with  $\text{CrO}_3$  in  $\text{H}_2\text{SO}_4$  at  $80^\circ$  1 hr. gave anthraquinone (85%); passage of dry air into soln. of III in  $\text{H}_2\text{SO}_4 \cdot \text{H}_2\text{O}$  at  $80-80^\circ$  6 hrs. gave the same product and II; III mixed with a little glycerol and  $\text{AcOH}$  and treated hot with concd.  $\text{HCl}$  and  $\text{KClO}_3$  gave anthraquinone and *ms*-dichloroanthrone; III reduced with  $\text{KI}$  in dil.  $\text{HCl}$  in the presence of a little alizarin oil gave anthrone, II, and a brown Hg deriv., insol. in org. solvents, which on treatment with  $\text{H}_2\text{SO}_4$  loses S, but retains Hg, analysis giving  $\text{C}_{14}\text{H}_8\text{O}_2\text{Hg}$  (mol. wt. in  $\text{H}_2\text{SO}_4$ , 596); it is apparently identical with I. Heating 0.6 g. II and 0.5 g.  $\text{HgSO}_4$  in 20 ml.  $\text{H}_2\text{SO}_4 \cdot \text{H}_2\text{O}$  2 hrs. at  $80-80^\circ$  with stirring gave 0.2 g. anthraquinone and 0.3 g. IIa; no Hg deriv. was isolated. IX Action of sulfonating agents on mercury-containing compounds of anthrone. *Ibid.* 891-5.—The action of sulfonating agents on *meso*-Hg derivs. of anthrone gives a complex mixt. as a result of direct exchange of the Hg residue for the  $\text{SO}_3\text{H}$  group, oxidative reactions, and side reactions. 10-Anthranylmercury sulfate (IV) (0.3 g.) and 2 ml.  $\text{H}_2\text{SO}_4 \cdot \text{H}_2\text{O}$  heated 1 hr. at  $100^\circ$  and then poured into 8 ml. water gave a ppt. contg. 0.26 g. original Hg deriv.; no sulfonic acid is detected in the filtrate; traces of anthraquinone and 0.03 g. II, m.  $284^\circ$ , are found in the

ppt. The Hg deriv. (1.2 g.) and 5 g. 20% oleum after 3 hrs. at  $70^\circ$  gave 0.3 g. II and 0.02 g. anthraquinone, while the soln. after neutralization, filtration, and acidification gave 0.33 g. anthrone-*meso*-sulfonic acid (V) (cf. K., C.A. 42, 125(f)); similar heating for 3 hrs. at  $135^\circ$  gave 0.04 g. V, traces of an anthraquinone-sulfonic acid, and 0.6 g. II, as well as traces of IIa and C. Heating 0.6 g. V with 5 g. 20% oleum 3 hrs. at  $135^\circ$  failed to yield anything from an alk. ext. besides 0.03 g. chloranthraquinone, m.  $202^\circ$  (obtained by treatment of the filtrate with  $\text{HCl}$ ); the insol. portion gave 0.08 g. anthraquinone and 0.3 g. II. IV (1.5 g.) and 5 g.  $\text{ClSO}_3\text{H}$  heated 3 hrs. to  $135^\circ$  gave some  $\text{HgCl}_2$  and 0.66 g. V, as well as 0.009 g. II and 0.005 g. anthraquinone. The Hg deriv. of II (2 g.) and 5 g. 20% oleum after 1 hr. at  $70^\circ$ , filtered hot after pouring into water, gave on neutralization of the aq. soln., filtration, and acidification, 0.3 g. V, while  $\text{HCl}$  added to the filtrate gave a trace of 1-chloranthraquinone, m.  $181.8^\circ$ ; the main ppt. (1.3 g.) on extr. with  $\text{CHCl}_3$  left 0.3 g. insol. residue contg. S and Hg and corresponding in compn. to IV; the  $\text{CHCl}_3$  ext. gave 0.7 g. II and 0.12 g. anthraquinone.

G. M. Kowaleff

PA 8/49761

USSR/Chemistry - Anthrone  
Chemistry - Dyes, Anthraquinone

May 48

"Studies of the Anthraquinone Series, IX," V. V. Kozlov, Lab of Dyes, Moscow Chemicotech Inst imeni D. I. Mendeleev, 4 3/4 pp

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Devoted to action of sulfurizing agents on mercury compounds of anthrone. With the meso-mercury compounds, a complex mixture is formed as the result of direct replacement of the mercury by a sulfo group, by oxidizing condensation and similar process. The action of oleum (700) on meso-mercury-sulfate or on dihydroquinone-mercury results in the formation of

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anthrone meso-thiocarbonate and dihydroanthrone as basic products. At 1350, the main product is dihydrodianthrone. When chlorosulfuric acid (1350) reacts with anthrone-meso-mercury-sulfate, the main product is anthrone meso-thiocarbonate. Submitted 18 Mar 1947.

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